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THE DENTAL RECORD.

VOL. XII. JANUARY 1ST, 1892. NO. 1.

Original Communications.

THE MISSING OR SUPPRESSED TEETH IN MAN. INAUGURAL ADDRESS.*

By ANDREW WILSON, ESQ., L.D.S.

AT our social gathering of last session, some of you will probably remember that in the few remarks I made, I strongly urged the advisability, or rather the necessity, of acquiring habits of accurate observation, mentioning in general terms, as an example of the result of not doing so, the case of a paper on a subject in comparative dental anatomy, "Teeth in Rabbits," by an eminent American dentist, which had a very liberal supply of errors of that description. Even in one of the illustrations, the lower jaw was reversed, and premolars were figured and described as molars, molars as premolars, and altogether the figure, a vertical section of part of the lower jaw and cheek-teeth, shewed what by no possibility could be seen, while the very characteristic arrangements of the dental tissues in these teeth were altogether overlooked. Some of the conclusions come to are correspondingly sweeping, thus he discovered that, all previous observers to the contrary notwithstanding, "these teeth are coated with enamel only upon their anterior surfaces," and that "the structure of the enamel differs from that of the incisors, in as much as it is composed of two layers." An inspection of the beautiful and accurate figure of a transverse section given in "Owen's Odontography," would, I suspect, have led to the suppression of the paper.

Now a great deal of literary dental work, consisted of recording of observed facts, from which we are all too apt to construct hypothesis, it followed that any errors of observation made what they believed facts, fictions, and so, as in the paper referred to, any generalizations or conclusions based on them were vitiated. As shewing how much observations, entered into scientific dental questions, I will, with your permission, take a subject with which I have been a good deal mixed up, that of the missing or suppressed teeth in man. What was known as the typical dentitions in placental mammals was I.$\frac{3}{3}$, C.$\frac{1}{1}$, PM.$\frac{4}{4}$, M.$\frac{3}{3}$, while that in man was I.$\frac{2}{2}$, C.$\frac{1}{1}$, PM.$\frac{2}{2}$, M.$\frac{3}{3}$, so that in man, one incisor and two premolars were missing, the question to be determined being, which of the incisors and premolars these were.

---

* Delivered before the Edinburgh Dental Students' Society, 2nd November, 1891

Up till comparatively lately, the unquestioned decision was, to quote from Mr. Tomes' Manual, 2nd edition, 1882, "The human subject does not possess the third incisor, nor the first two premolars," then he goes on to add the deduction "so that a somewhat abrupt change of form, in passing from the incisors to the canines, and from the latter to the bicuspids is no more than might be anticipated," no notice being taken of the at least as abrupt step from the premolars to the molars, although according to his view the second bicuspid was the fourth premolar, so no tooth was missing there.

This view so decidedly expressed, I accepted, until when on the formation of the Edinburgh Dental School, I became lecturer on Dental Anatomy, and so was necessitated to go more thoroughly into the subject.

This led first to my differing as to the missing incisor, and then as my own observations extended, as to that of the premolars also, and for several years I have been teaching that the missing incisor is the middle or second, and the premolars are the first and fourth.

My reasons for so concluding were purely dental, and may be condensed into the following three. First, teeth which are liable to be suppressed, not unfrequently shew themselves either as dwarfed, or as more or less rudimentary in form, that is conoid ; second, the corollary of this, teeth which are normally suppressed in any species, not unfrequently put in an appearance, usually in a more or less rudimentary form ; lastly, I recognized those teeth which in man are called supernumerary or supplemental, as being the normally missing members of the typical series.

Now, it is very difficult to upset old-established conclusions, more especially when these are supported by great names, but, fortunately the question as to the missing incisor had got mixed up with that as to the situation of the fissure on the alveolar border, in cases of maxillary cleft.

Most of you are aware that such fissure (not necessarily involving cleft palate) was held to be due to arrest of development of the inter-maxillary bone, and that the fissure on the alveolar process was in the line of maxillo-intermaxillary suture.

But closer observations shewed that, in very many cases, there was present on the distal side of the fissure, and so on the mesial side of the canine, a more or less abnormally formed tooth, which undoubtedly belonged to the incisor series.

This necessarily involved that one or other of two received views was wrong, either the definition of the canine as being the tooth at the mesial extremity of the maxillary bone, that is, close to or at the suture, or that as to the position of the fissure as being uniform. Dr. Paul Albrecht, an eminent foreign anatomist, as the result of an extensive series of observations, both human and comparative, adopted the latter view, and came to the conclusion that the inter-maxillary bone originally consisted of two bones ; the mesial one of which, in man normally carried the socket of the central incisor, the distal, that of the lateral, and that the fissure not unfrequently lay in their line of junction, that was, it was intra-incisive, also, that in those cases of cleft in which an extra incisor was present, its socket was invariably in the mesial portion, along with that of the central, shewing it to be the second incisor of the typical dentition.

Professor Sir William Turner, in a paper on "The relation of the alveolar form of cleft palate to the incisor teeth and the inter-maxillary bones," read before the Royal Society of Edinburgh, strongly supported Dr. Albrecht's conclusions, and proposed that the tooth between the fissure and the canine should provisionally receive the name of pre-canine, although, in his own opinion, it was undoubtedly the third incisor of the typical dentition and the normal lateral in man.

Mr. Oakley Coles, who had had very considerable experience in cleft palate cases, exhibited a large series of models of such before the Odonto-Chirurgical Society, and while pointedly declining to commit himself as to which incisor was that suppressed, stated that "It will be observed that there is not a single instance of fissure of the alveoli occurring between a true lateral incisor and canine," in the cases he had met with.

As a consequence of this discussion, Mr. Tomes, in the latest edition of his Manual, closing a paragraph referring to the facts I have been laying before you, says, "if this inference be correct, then the lost incisor in man is probably I^2," and treating of the teeth of the primates, says, we "bring forward a certain amount of evidence, which raises a doubt as to whether it is not I^2 which is missing in man."

As regards the missing premolars, although we have not got to go so far back among mammals to find a nearer approach to the typical number, than seen in man, all the American monkeys have $PM\frac{3}{3}$; there is less advance.

All my observations, both human and comparative, lead me to the conclusion that those suppressed are the typical PM.^{1} and PM.^{4}. No one claims PM.^{1} as present in man, so that the question is limited to whether the second bicuspid is homologous with the third or the fourth premolar. In support of my view, I have in my own practice met with a case in which there were in the lower jaw three bicuspids present *in* the arch on each side, the supernumerary ones being the most distal. That on the one side erupted some time after the extraction of the first molar, that on the other after the removal of the second molar (the first on that side having been long previously removed, the second appropriating most of its site).

A model shewing a somewhat similar state of matters is in the Odonto-Chirurgical Society's Museum, but history unknown.

Then I hold that those more or less abnormally formed supernumeraries met with on the buccal surfaces of the molars in the upper jaw, from between the second bicuspid and the first molar, back to the wisdom tooth, and also not unfrequently geminated with the second and third molars, are the missing fourth premolar which has moved backwards with the development backward of the jaw to give room for the permanent molars.

Another point in support of my view which I regard as important, although it is an indirect one, is that one of the normal bicuspids and that *not* the first, is now not unfrequently met with dwarfed, sometimes very much so, and in one case I have met with it conoid, shewing that it, following in the wake of the lateral incisor and the wisdom tooth is marked out for suppression.

I do not suppose that as yet I have much support in my views as to the premolars, still they have received the honour of being noticed in the Manual, although, as yet only in a foot note. I am sorry to say that that volume, able as I regard it, and much as I admire it, shews even in its latest edition many instances of both careless observation and writing, the more to be regretted, seeing that it is not at all likely to have any competitor as a text book in this country at least, and unfortunately the subject does not, so far as I know, form part of the curriculum of any American college (although it finds a place in the " American System of Dentistry ").

I will only notice a few of these. "The second deciduous molar has four cusps and resembles a second lower permanent molar." "Cementum; in many teeth of persistent growth it originally invested the whole crown, and after it has been worn from the exposed grinding surface, continues to invest the sides of the tooth, (see the description of the complex teeth of the elephant, cow, horse, &c.)," none of these examples being teeth of persistent growth, and their only claim to complexity lying in their having very long cusps.

We still have the old confusion regarding MM.[1] and PM.[1], and no notice is taken of the fact that the Tapiridae are probably the only recent mammals which have both.

In three places, treating of the premolars in the bears, he confounds teeth shed with teeth suppressed, I quote the last. "All four of the premolars seldom persist through the lifetime of the animal, the first premolar, however, is rarely (if ever in recent species) lost, the second being the first to fall out, and then the third. As the fourth is never lost, in most adult bears the first and fourth premolars are found with a wide interval between them. The premolars of bears thus form an exception to the rule, that when a tooth is lost from the premolars the loss takes place from the front of the series." The rule among the carnivora being that incisors and premolars are suppressed from the front, molars from the back of each series.

We have continued the old objections to the term canine being given to a special tooth in the typical dentition. There is no greater need to give the term canine a twofold sense than the terms incisor and molar. If canine is merely equivalent to caniniform premolar, what name is to be bestowed on the *temporary* canine?

The central pair of upper incisors in the kangaroo rats, and the lower incisors in the kangaroos are still erroneously given as of persistent growth.

And now, in conclusion, allow me to express my regret that so few of our profession take up comparative dental work, looking upon it as a subject only to be got up for the final and then allowed to evaporate. I think that if they would only interest themselves in the subject a little further, they would find it a source of much pleasure. A little more acquaintance with it would, I think, have made most of the writers on dental pathology hesitate in stating that hypertrophy of the cementum or dental exotosis necessarily involves pain, when they saw that in many mammals the cementum steadily increases in thickness during their whole lifetime quite normally, as well seen in the marine carnivora, and more especially in the smaller teeth of the walrus, in old individuals of which species cementum constitutes by far the larger portion of the tooth. Again the tusks of the same mammal show us that intrinsic calcification of the pulp, that is its conversion into osteodentine, may be going on continuously without involving even the idea of pain.

I now conclude gentlemen, thanking you for your kind attention to what I fear has been a very inadequate address.

THE WORKROOM AND ITS TOOLS.

By W. Booth Pearsall, F.R.C.S.,Ire., L.D.S.,
Dentist to the Dental Hospital of Ireland, and Lecturer on Dental Mechanics in the Schools.

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I.—GENERAL ARRANGEMENT.

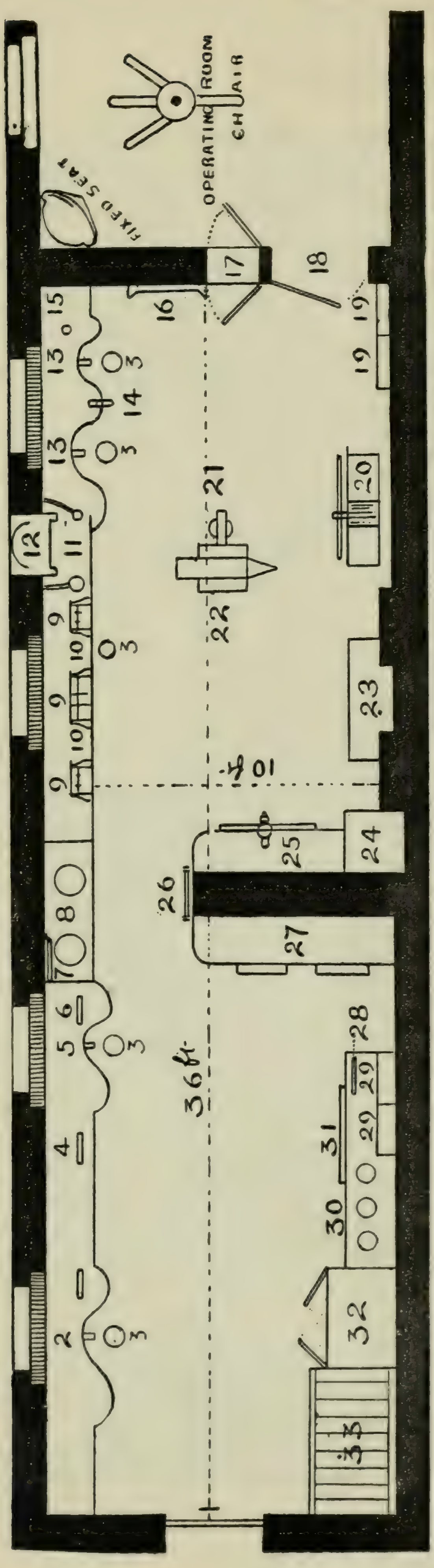
The planning and general arrangement of a dental workroom is a subject which has not been treated very exhaustively in dental literature. To those entering practice, the planning of the workroom is a matter of very great importance, for it is evident that the old-fashioned methods, although they have been thoroughly tested in the past, do not adapt themselves altogether to the more modern apparatus now used of necessity by the profession.

The position of the workroom is usually governed by the space and other accommodation in the house used by the dentist for his practice, and is more commonly to be found in the basement or in the attic. If possible, a room in a return building on a level with the operating rooms should be chosen so as to admit of great freedom of access to the dentist. Stairs, whether to the upper part or to the lower part of the house act to a certain extent as an impediment in rapidly gaining access to the workroom, so that if unnecessary noise can be muffled or avoided, and easy access can be secured on the same level as the operating rooms, provided the workroom is well lighted and well ventilated, it will prove of greater use and comfort than if the workroom is placed at some distance from the operation rooms.

The benches needed for carrying out the different processes in dental mechanics require to be well planned, so that when a heavy press of work flows into the practitioner's hands it can be as readily and as accurately executed as when more leisurely periods of practice occur. Abundance of light and facility for rapidly ventilating and freshening the air of a workroom should, if possible, be secured, not only for the great facility it gives for doing accurate work, but also for the sake of the health of those who occupy the workroom for many hours. The work benches used by the senior practitioners are copied from those used by jewellers, and are the survivers of the bone age, when ivory carving was practiced, the main idea being a square area with spaces cut out, opposite to which the workers sit. This bench is generally placed beneath the window, and the various tools are either laid on the bench or hung in racks under the window at the back of the bench.

Dental work involves so many different processes that a better arrangement can be effected by putting a narrow bench round the workroom, care being taken to place the grinding lathes and the gold bench in good light. The usual height adopted for benching workrooms is that of an ordinary table, but this method has one great disadvantage, that in careful laborious work the person sitting at the bench has to stoop a good deal over the work, causing considerable fatigue in the muscles of the back and shoulders, and often severe frontal headache. A better method than this would be to have a bench the height of the elbow when standing. This height is to be commonly observed in the work benches of watchmakers, where the workers not only can sit up to the bench with their backs straight, free from stooping, but also can do certain processes standing when using the "throws" or other delicate lathes for fitting the arbors and pivots of the wheels of watches or clocks. From many experiments that I have made I prefer the higher bench, the height of the elbow of an individual standing, say 5 ft. 8 ins. in height, or 5 ft. 10 ins., as in this case the posture of work can be varied from sitting to standing with very great comfort and no loss of efficiency in the character of the work done.

A narrow room, of suitable size, of 10 or 12 feet wide by 24 feet long, should be chosen. If the windows are on the long side of the room it will be a simple matter to put a bench about 18 inches wide around this room, supported on iron brackets which are fixed to the wall. Not only do these heavy iron brackets give great steadiness



PLAN OF WORK-ROOM.

DETAILS OF PLAN.

1. Door to garden.
2. Work-bench for brass, iron, steel, &c.
3. Fixed seats with revolving tops.
4. Lathe for polishing, buffs, scratch brushes.
5. Bench for dressing vulcanite work.
6. Gold and vulcanite polishing lathe.
7. Fletcher instantaneous water heater.
8. Wash bowls.
9. Corundum lathes for grinding teeth.
10. Wax benches.
11. Soldering bench.
12. Stink closet.
13. Gold bench.
14. Bench vice.
15. Dental engine.
16. Trough fixed.
17. Impression tray locker.
18. Door to operating room.
19. Lockers for record models of cases of irregular teeth under treatment.
20. Flatting mills.
21. Vice on pillar for malleting.
22. Anvil and block.
23. Gas forge and furnace.
24. Safe for valuables.
25. Vice and bench.
26. Roller for drying hands.
27. Plaster bench.
28. Circular saw for plaster.
29. Lockers for vulcanite impression compound, sand rings, and plates.
30. Vulcanizer bench.
31. Sand-moulding box under vulcanizer bench.
32. Chest of drawers for models.
33. Steps to upper floor.

and firmness to the bench, but they also remove the impediments to sweeping the floor, which the legs commonly used prove. These if anything is dropped when working at the benches, of course obstruct the view, and thus prevent the object being quickly recovered. The method I have adopted for my own workroom is to have the gold places and all the tools relating to metal work at one end of the long bench, next to that is placed the soldering lamp, then the wax bench, then the grinding lathe, next the wash basins with full supplies of hot and cold water, next the vulcanite bench and polishing lathe—all in full light. On the opposite side of the room can be placed the fireplace with the gas furnaces for melting zinc and lead, or gold, and the plaster bench and vice bench. The plaster bench and vice bench will be a little lower than the height adopted for the bench previously described, because it is not so easy to file heavy objects at the higher level.

The tools should be placed within easy reach and within full view of the workman, in such a manner as to permit him to take up any tool without knocking down a number of others, and also of making it as easy to replace a tool as to drop it on the bench. This would seem at first sight an inconvenient way of working, but a week's practice would show anyone who patiently tries this method that a good deal of time is saved by always having the tools in special places of their own, instead of having to tumble over a heap of tools to look for something that has been hidden or mislaid in the confusion or litter usually seen on the work bench.

American birch, English elm, mahogany, or any hard wood of a firm, close texture, forms an admirable bench, as it is more enduring in wear, and is much more easily cleaned than a soft wood. In the metal-working part of the bench a bench-pin should be placed in the centre of the circular sweep. An easy way of fixing the bench-pin is to cut a groove the width and depth of the pin in the bench, and over this fit a plate of iron or thick brass screwed into the bench, leaving a mortice into which the pin can be pushed. I prefer a bench-pin 2½ inches wide by ¾ inch thick, projecting 4 inches or 5 inches from the bench, slightly tapered to the free end, thus leaving a tolerably flat surface on which small objects can be laid during their fitting or adjustment without any risk of their rolling off, such as is experienced in the thicker or more clumsy pins usually adopted. This style of pin also affords a comfortable support on which to file or shape small pieces of gold.

On the right-hand side of the gold bench should be placed a small vice to hold pieces of wire or any small article which it may be necessary to hold very firmly. Underneath the "place" should be tacked a sheep skin, commonly known as "basil" or "skiver," in which can be laid the gold tray to receive the filings or lemel as it is made. The gold tray for receiving the filings and scraps should be of ample dimensions so as to avoid any unnecessary loss of precious metal. It is a convenience to have beneath the gold work bench a shelf about an inch below the under surface of the bench, into which can be pushed the two or three pairs of pliers and files that are very constantly in use, with their noses pointing out.

Underneath the window and in front of the bench place the tools can be conveniently arranged upon two kinds of racks, one to hold broaches, sculptors, drills, burnishers, and other slender tools resting on the work bench. On the other, somewhat higher, the plate shears, piercing saws, hammers, punching pliers, cutting pliers, and other tools for holding, or shaping, or bending small bits of gold plate or wire. The usual plan of placing pliers and shears across a ridge of wood is, of course, a very common and simple method. In executing rapid work, however, by this system it is not an uncommon thing in taking out one pair of pliers to pull out one or two others which either fall on the bench or on the floor. By the more convenient method, each pair of pliers has its own place and can be easily lifted out and replaced without disturbing the other tools, and it is well to classify the pliers in whatever order may prove most convenient to the workman, the shears and other heavy and large tools being placed towards his right-hand side, the smaller pliers on the left-hand side.

It is a very old custom to have a number of drawers to hold these tools, in fact one might almost say it is the invariable practice, but drawers, although at first sight extremely convenient and tidy to look at when the workroom is cleaned up and there is no work going on have to my mind one great practical objection that if they should jam or fail to open or shut smoothly a hasty shove will disarrange the tools placed therein, or a too energetic pull will shake them out of the places they are supposed to occupy, so that time is lost looking for the particular tool needed. Drawers have a further objection that they are usually placed in an imperfectly lighted position *beneath* the bench, so that not only have we the disadvantage of upsetting the contents by a hasty action, but we have the further disadvantage of having to grope for the tools in the dark. Shallow drawers in which only one layer of instruments or tools would be laid would to some extent meet this objection, but it is not usual to go to the expense of making a number of shallow drawers so far as my observation has extended in dental workrooms.

The soldering arrangement is made so as to admit of the workman soldering while standing up. I am aware that it is quite possible to solder sitting down, but standing up appears to me better, as one not only occupies a firm position in the standing posture but one can press the chest against the front of the bench, and, if necessary, place the elbow on the bench so as to firmly hold the soldering block on which the object to be soldered is placed. At the back of the soldering bench I have cut an aperture in the wall in which I have inserted an ordinary household sink, standing on end with the waste pipe uppermost, to act as a stink closet in which pickle or whatever acid may be chosen for removing the flux from the gold, can be either heated or kept ready for instant use. A small sash slides up and down in front of this sink so as to prevent the fumes of the acid entering the workroom. Such a sink costs about 16s., and is made of glazed earthenware, extremely tough and strong, and the white glaze helps to prevent the loss of light. This form of stink closet does not require any flue as the currents of air that flow along the outside wall of the workroom tend to carry away the acid fumes at once, so that they do not return into the workroom even if the sash is lifted up. In this stink closet is placed one of Fletcher's slow-combustion burners under a sand bath, so that porcelain cups or acid pans can be warmed and acid boiled in them without risk of fracture. A small gas supply enters from the side so that acid can be boiled for a considerable time without the noxious odours vitiating the air of the workroom.

The wax bench is the same depth as the gold bench, but differs from it in being perfectly square, no sweep being cut out of it, and over its swivels one of Fletcher's Argand burners. I find this cheap little tool the most comfortable flame for rapid work I have yet tried. It can be adjusted to a very low point of combustion or a very hot flame can be produced by turning on the gas tap.

Across the window at the back of the bench is another tool rack in which is placed the pliers for bending the platinum pins of teeth an old pair of forceps for warming off tube teeth when it is necessary to take work to pieces for repair, and a set of copper modelling tools for use with wax, and an oil can. I have discarded the use of steel tools for modelling up bites or wax plates intended for vulcanite work, because the steel so rapidly cools that much time is lost re-heating the small knives and steel rods usually made for these purposes. Copper being an extremely good conductor of heat, as well as somewhat slow in parting with its heat, appears to me a more sensible metal to use than steel, and as a hot copper knife will cut wax even more quickly than a steel one, a great deal of time is saved in having a tool that once warmed retains its heat for some moments. Four different shapes have seemed to me convenient and they can be applied to almost any purpose needed in " waxing-up " teeth.

The grinding lathe is on the left hand side of the waxing bench so that teeth can be quickly ground, fitted, and waxed up without moving from the bench. The lathe has a cast iron standard carrying a treadle and fly-wheel, which is strutted between the bench and the floor, the inside part of the lathe band running through the bench and over the lathe head. The lathe head carries three corundum wheels and has a constant supply of pure water dropping on the wheels. This clean water can be drawn from a vessel at a little height above the bench, or direct from the town's water. We are all familiar with the long white splash which decorates our waistcoat when working at the grinding lathe in a hurry as it is usually fitted with a sponge, the centrifugal force throwing off from the edge of the grinding wheel the water it is fed by. In order to get rid of this annoying splashing I have invented a very simple and effective device which completely prevents it, and which is far better than any sponge or brush for wetting the grinding wheels. A little tongue of thick harness leather is placed above the wheel so that it bends over and touches it a little in advance of its diameter. The water supply drops on the upper surface of the leather and is conducted to the edge of the wheel. When I first invented this method of supplying a water drop to the grinding wheels I used pieces of hard wood, but my friend Mr. J. A. Biggs, of Glasgow, who from hearsay adopted my method of wetting the grinding wheels with clean water without splashing has improved upon the pieces of wood and has substituted leather. The piece of leather has the further advantage that the friction against the wheel is noiseless. It will be found that clean water dropped liberally upon the wheel enables the workman to cut porcelain much more quickly than water that is full of grindings. The water drip is received on a leaden surface at a convenient distance beneath the wheel which slopes to one corner through which the waste water runs. This allows the particles of gold to deposit to a considerable extent on the lead pan without running off with the free water, and the rich gold grindings can be removed either day by day, or week by week, and put into the receptacle for the sweep or other waste products of precious metals.

At the side of the lead pan or trough is a piece of mahogany on which the right hand can rest while holding the tooth to be ground, and on the front of this pan is a strip of mahogany which also affords rest for the left hand. The mahogany is smooth and rounded, and is more comfortable for the head to rest on than cold lead.

I use two basins for washing, one a rough iron pattern for cooling vulcanite flasks and for allowing the wax and hot water to run away outside the work-room. Over this bowl is placed one of Fletcher's instantaneous water heaters, so that in scalding out a wax plate from the vulcanite flask an unlimited supply of water can be made scalding hot.

The polishing lathe comes next to this bowl in order that the different grades of polishing work can be quickly performed. This lathe is of a cheap American pattern which works exceedingly well and has a treadle like the grinding lathe supporting the bench.

The vulcanite place comes next to the polishing lathe, and is fitted with a skin and bench pin, and a rack of tools for scraping and preparing the vulcanite for polishing.

The vice-bench is a thick 2 in. piece of birch, firmly bolted against the wall, so as to allow the workmen to draw down wire through a draw-plate ; and the wall behind the vice benches is covered with wood, on which we have the draw-plates, draw-pliers, files, hammers, and other tools for heavy work securely placed in position.

A convenient way of supporting hammers and other heavy tools is to screw an ordinary empty cotton reel with a heavy screw to the wood. Two of these reels will support a very heavy hammer, and are immensely strong, so that very frequent use cannot loosen them. The wood also cannot rust. The rasps and files for zinc, brass or iron, turnscrews, spanners, and other useful tools are placed in racks in a horizontal position, with the handles turned to the right, so that any tool can be taken out without disturbing the others. This is effected by screwing inch pieces of wood, separated by a division the same width as the thickness of the tool to be placed in the rack, and if the surface of the piece of wood on which the tool rests is slightly bevelled toward the back, the tendency of the tool to fall out is rendered impossible with ordinary use. By this method all the files and tools are immediately in front of the workman, and close to his vice, so that in taking a file out for use he cannot scrape it against a neighbouring file and injure its teeth, and the file can be immediately placed in its rack without disturbing any of the others.

The draw-plates are fitted in a similar way, one above the other, the space left between the pieces of wood being sufficient to let the draw-plates slide between, so that any hammering on the vice-bench or vibration cannot shake the tools off their supports.

The draw-tongs hangs on the end of these pieces of wood, so that holding the draw-pliers with the right hand, the workman can take out a draw plate with the left, the vice can also be opened with the right hand, holding the tongs, and the draw-plate put into its aws with the left.

The plaster-bench is a similar piece of wood to the vice-bench, 2 inches thick, and is fitted with a rack, on the wall behind it, to hold the vulcanite flasks, clamps, vaseline pot, and other plaster tools, in a convenient and accessible way. On the left hand end of the bench is placed a screw-press for holding the vulcanite flasks together while the plaster is setting. On the right hand end of the bench I have placed one of Fletcher's hot water ovens for drying models with a gas supply. Under the bench are two boxes containing plaster of Paris, which are designed to preserve a large bulk of plaster for a considerable period of time without deterioration. Access is obtained to the plaster by lifting up a sliding door at the bottom of the plaster bin, so that a spoonful or a shovel full of plaster can be easily obtained. These plaster bins are very strongly built, standing on four stout legs, 9 inches from the floor. I have found from experience that when a cask of plaster has been allowed to remain for any length of time on a floor, 6 or 7 inches of the lower part of the plaster becomes deteriorated. The bins are made to hold half-a-barrel of plaster, but of course can be made larger. By elevating the plaster bin upon legs above the floor, a current of dry air is always circulating about the plaster to keep it dry.

Hanging beneath the plaster bench in a convenient position is a galvanized bucket, which is hung on a hook underneath the bench by a piece of rope or chain of such a length that, when the bucket is seized with the left hand, it can be brought immediately underneath the choppings of the plaster between the workman and the bench, and the waste plaster can be scraped into the bucket, which is allowed to swing back into its place. In this way all the dirt, the plaster detritus and parings, are kept in a tidy way, and are removed every day from the workroom.

At the end of the workroom, and connecting with one of my operating rooms, I have formed a cabinet in the thickness of the wall. One door of this cabinet opens into the operating room, the other door opens into the workroom, and on the workroom door is fitted a series of shelves with slots in them, in which are placed the handles of impression trays, as soon as they are clean. I have a similar cabinet in each of my operating rooms, with a set of impression trays, which are stamped on the handles, so that it is easy to know to what shelf and to what locker each tray belongs. As these tray-keepers or cabinets can be opened from either side, this facility of placing trays in their proper places as soon as they are cleansed and polished without disturbing the operator saves much confusion in busy times.

At some eight feet or so from the floor a shelf 24 ins. deep runs round the workroom, on which can be placed strong boxes containing brass, zinc, lead, steel, copper wire, and other paraphernalia, that no workroom should be without. These boxes can be easily reached by the aid of a short step-ladder, and the steel or other metal wanted can be selected for use and the box returned to its place, thus leaving the floor as free from encumbrance as possible.

Close to the plaster bench I have another heavy work bench, the same height as the gold and lathe benches, on which I have screwed the vulcanizers. These vulcanizers are sufficiently apart from one another to allow of ready access to the boilers. They are all fitted with Gartrell's pressure gauges, and to each of the vulcanizers is attached a blow-off arrangement, by slipping a piece of india-rubber tubing over the nipple of the screw tap, that enables the steam to be discharged from the vulcanizer. The waste steam is conducted into a compo $\frac{3}{4}$-in. gas pipe, which goes to the external air, thus saving the discharge of much of the offensive smell in the

the workroom when the vulcanizer is opened, and almost obviating the tendency of the tools to rust from this damp atmosphere.

At the end of this bench I have fitted a small circular saw with coarse teeth, and a small box hinged underneath to hold the powder that falls from the saw. This saw is occasionally used for quickly cutting off pieces of plaster should the models be cast unnecessarily large, and is a very valuable time-saving arrangement.

Under the vulcanizer bench is the sand moulding box for making metal dies. It is of a convenient length and width and on castors, so that when in use the box with its supply of damped moulding sand can be rolled into the light of the window, and when it is not in use can be put out of the way under the vulcanizer bench which it does not exceed in width.

Midway between the soldering bench and the other side of the workroom, in the middle of the floor, I have placed the anvil-block, and hammers, together with a new arrangement for holding dies, while the gold plate is being hammered into shape, before it is placed in the lead counter to be struck by the zinc die. As it is only a step to the soldering lamp for annealing the plates when hammered or "swaged"; and the "pickle" is also at hand in which to place the hot gold plate, much time is saved to a skilful workman. The floor of the workroom is made of concrete, in order to prevent ground damp, to deaden noise, and to resist vibration. The smooth, close surface, free from cracks or joints, tends to cleanliness and speed in tidying up after work is done, and enables small objects to be quickly recovered that may fall on the floor. I designed and built my own workroom, and was thus able to provide for all the wants of my assistant and myself, in the way I have been guided by many years of tear and wear of experience, and do not regret the outlay, as it has enabled me on several occasions to undertake and satisfactorily execute a quantity of work in busy periods of practice, no one could possibly do unless at an unwise expenditure of health and strength.

The various details of workroom appliances and conveniences will be minutely described in future articles, and will be liberally illustrated with artistic diagrams, all of which will be drawn from the objects described under my own supervision by an artist friend. As I hope to speak of other methods as well as my own in the succeeding articles, and embody in them the experience of such skilful and original workers as J. A. Biggs, R. P. Lennox, J. H.

Gartrell, J. H. Balkwill, Daniel Corbett, junr., R. T. Stack, Bowman Macleod, George Brunton, Amos Kirby, George G. Campion, J. Chartas Birch, and others, whose names I hope to formally announce. I trust that an important branch of dental mechanics will not suffer in my hands, but that the lessons of experience and experiment thus brought together will prove of use and interest to the members of my profession.

ON SOME MODIFICATIONS OF CONTINUOUS GUM WORK.*

By J. Turner, L.D.S.

This paper will of necessity be brief and incomplete, but I hope the discussion ensuing will more than compensate for its defects.

The restoration and reproduction of the dental tissues, viz., gum, by an artificial substitute, possessing at once a life-like appearance and readiness of adaptation, has engrossed the attention, and brought into activity the inventive and manipulative skill of many members of our profession.

The various dental companies have endeavoured to grapple with this important subject by the production of a rubber which would meet all the requirements, but they have been unsuccessful.

In considering the means at our disposal to remedy the defect, we firstly take rubber, the speciality misnamed gum-rubber. The great majority of dentists use this agent to restore the deficiency due to absorption, but its glaring artificiality, and its only too apparent unsightliness in the mouth, renders it an object of disgust rather than pleasure, and to an operator endowed with the smallest degree of artistic perception its appearance is painfully obnoxious. The best so-called gum-rubber produced to simulate nature is undoubtedly shaded pink. The light and shade produced after careful manipulation deceiving the eye to a certain extent, but nevertheless, with all its merits, it lacks translucency, and presents a dead and unlifelike appearance.

In dismissing rubber, we cannot but come to the conclusion that its days as a gum substitute are numbered, and that the only medium possessing all the characteristics of nature is mineral.

Gum Sections, supplied ready to hand, are in many cases of great value, but in others their stiffness and inadaptability to the irregularity of many mouths prohibit their use to a certain extent. Therefore we are left no other alternative but to make use of the materials to hand, namely, manufactured teeth, and prepared porcelain.

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* Read before the Odonto-Chirurgical Society of Scotland.

Continuous Gum Work.—This work is the perfection of prosthetic dentistry. The artistic instincts which should pertain to every true dentist are brought into activity, and a work of art is produced. The difficulties incidental to the satisfactory completion of the work, the expense incurred, and the time expended in its construction, have been potent factors in limiting its universal adoption. In the modification which I have the pleasure to submit to your notice, the difficulties just referred to, time, labour, and expenditure are reduced to a minimum.

PORCELAIN GUM FACING ON GOLD PLATE.

The plate is struck in the ordinary way, a gold wire, pin thickness, is soldered along the extreme edge overlapping gum on the labial side. A piece of platinum foil is either struck or burnished on the alveolar border, carrying it down to the wire and slightly upwards so as to form a reliable edge for the porcelain. This second plate is slightly secured to the base plate so as to admit of its ready removal.

The teeth are mounted in the ordinary manner, securing them to the platinum plate on the labial side with wax. When their adjustment is complete, an iron wire is carried round their face from molar to molar to obviate any displacement.

Before removing the teeth in conjunction with the platinum plate from the base, it is advantageous to have a lop bite to facilitate replacing of the completed section.

The base plate is marked for the retaining pins, and the case is ready for investing.

Investing.—The teeth are placed crown downwards in the material, leaving a quarter of an inch of substance underneath. The pins of the teeth and the plate being securely fixed in the investment. When set, the wax is removed and the case thoroughly dried. When this is completed it is in a condition to receive the body.

Body.—This is mixed with distilled water to the consistency of a thick paste, which is applied to the platinum face and modelled as nearly as possible to what is desired when finished.

Firing.—The case is then placed in the front of the muffle, and is gradually carried to the posterior end.

When satisfied that the moisture is thoroughly gone, the door is placed on the furnace. In five minutes thereafter the block will be sufficiently fired.

When satisfied that the firing is perfect, the door is removed, which immediately reduces the temperature without chilling. The case is by degrees brought to the front of the muffle and left to cool.

When cold, any defects in the body due to shrinkage, are filled up, and the case replaced in the furnace, using the same precautions as before with regard to the drying, heating and cooling.

The body being perfect, the gum is now put on, modelling it carefully to the exigencies of the case, aided by the individual capacity of the operator. It is now ready for its final firing. Dry carefully, then submit it to a brisk heat for about six minutes, and the operation is complete. Cool the case carefully, place it in slightly warm water, and the stool will fritter away, leaving the case ready to be adjusted to the model. If the edges require trimming, do it gently to avoid fracture. Adjust the case to the bite, secure it to the plate, invest it in a flask, pack it with 1 × pink rubber, the only pressure necessary being a hot burnisher. Model as in the ordinary combination way and vulcanise. In the interval of cooking the gum, take a thin strip of gold plate, run it along the border of the gold wire, leaving a free edge of plate to burnish along the lower border of the mineral. I would also recommend all coarse polishing to be done during that time.

2ND. PORCELAIN GUM FACING ON VULCANITE BASE.

The same procedure is followed as in Case 1, except that the materials are wax. The case to be packed on the model so as to submit it to no extreme pressure.

Partial Cases.—To supply a deficiency between canine and canine, a platinum foil plate is struck or burnished upon the deficiency. The teeth are set and adjusted to the bite, and the gum is prepared in the same manner as before mentioned. When complete, strip off the platinum and replace it with a layer of rubber. This saves the metal and does not detract from its strength. The precautions as to the packing are the same as before.

Jointing Gum Sections with Porcelain.—The blocks are mounted in the ordinary way leaving a V-shaped aperture between the sections, the widest portion being towards the labial surface. The sections are secured together as in Case 1. Invest, fill the seams with gum, colour and fire. One application being sufficient.

Stool or Investment.—This is composed of two parts of ground muffle, one part of asbestos, and a small portion of plaster of Paris, just sufficient to keep the mass together. An excess of plaster would play havoc with the blocks. The case should not be removed from the stool or investment until the firing is completed, it retaining its integrity throughout five or six firings.

Furnace.—The furnace used is an ordinary blast furnace, such as is used for the ordinary work of a laboratory, with the exception that the top brick has been removed and a cast iron face with an aperture to receive the muffle has been substituted. The fuel recommended is gas coke.

The Gum and Body used is Ash's, which fires at a lower temperature than Allan's, and produces an excellent result. Scrupulous cleanliness should be observed throughout the whole operation.

In conclusion, though I have done the subject an inadequate justice, I trust that my efforts will be pregnant with good results, stimulating especially the younger men to bring into general use this beautiful, natural, and artistic work.

NOTE.—I do not claim originality for the system advocated above, but not having seen it referred to in any publication, I worked it out conscientiously, animated solely by two desires, firstly, to combine simplicity with a moderate expenditure of time and money, and secondly, that those who were unfamiliar with the work might have the advantage of the experience of one who had carried it out practically.

SOME NOTES ON A CASE OF REPLANTATION.*

By J. TURNER, L.D.S.

On March 20th, 1884, Mr. ———, aged twenty, had a mesial cavity of left upper central incisor filled with gold by Mr. R——, the tooth from that period proving subject to thermal changes.

Two years after, the patient suffered intense pain from the tooth, and consulted Mr. M., who examined the tooth and diagnosing abscess, recommended extraction.

This was accordingly done, and without removing the tooth from the forceps, the apex was ground off, the tooth replaced in the mouth, and eight days later was on inspection found to be perfectly firm, but slightly longer than its fellow.

It remained quite normal for nine months, when the patient observed a swelling on the labial surface, but no pus could be evacuated on puncturing the gum immediately over it. This symptom gradually subsided without any treatment.

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* Read before the Odonto-Chirurgical Society of Scotland.

Similar swellings occurred at intervals until the spring of 1891, the abscess on each occasion pointing, on the application of hot fomentations, sometimes on the lingual, sometimes on the labial surface.

The tooth was now very loose, and the continued oozing of pus becoming offensive, Mr. Turner extracted the tooth, June 19th, 1891. It came away very easily, and from its characteristics supposed the root to have been absorbed, and on examination with a probe nothing was felt in the wound. An artificial tooth was inserted immediately and the symptoms subsided. The patient had no further trouble until October, when a swelling again appeared.

A probe was passed into the gum and a hard movable substance felt, a pair of alveolar forceps were carefully inserted and the root of the tooth extracted. It was black, and partially absorbed from the top to bottom on the mesial side, and was lying loose, bathed in pus.

The peculiarity of the case was that absorption had started at the neck on the lingual aspect, and worked its way to the labial side. cutting the tooth across—the gum growing completely over the root.

Taking the result of the case, the patient had the use of the tooth for five years, yet he (Mr. Turner) thought that it would have been better practice to have removed the stopping and to have treated the abscess in the ordinary way, and the patient would have had the benefit of the tooth without the discomfort attendant on the replantation.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE ORDINARY MONTHLY MEETING of the above Society was held on Monday, December 7th. The President, Mr. S. J. HUTCHINSON, M.R.C.S., L.D.S.Eng., in the chair. The minutes of the previous Meeting were read and confirmed.

Mr. Frederick Canton, and Mr. J. F. Colyer were elected Auditors for the ensuing year.

Mr. H. B. Gill, of Upper Norwood, and Mr. Carl Schelling, of Blackheath, signed the obligation book and were duly admitted Members of the Society.

Mr. G. O. Whittaker, of Manchester, was balloted for and elected a Member of the Society. The following gentlemen were nominated for membership, J. E. Harris, London D.D.S.,

J. P. Smith. London, L.D.S.Eng., Dr. E. Roughton, London, W. L.D.S.Eng., Percy Edgelow, London, L.D.S.Eng., M. Y. Woolfe, London, L.D.S.Eng., W. H. Wheatley, London, L.D.S.Eng., J. S. Amoore, Edinburgh, L.D.S.Eng., W. Palethorpe, Birmingham, L.D.S.Eng., E. T. Cooksey, Worthing, L.D.S.Eng.

The President said, that it now became his pleasing duty to announce that an old and honoured member of the profession had been recommended by the Council for election as an Hon. Member. To be in accord with their bye-laws, the recommendation of the Council should have been confirmed by an election, but when he mentioned the name of Mr. Thomas Underwood, he felt sure that he might be allowed to abrogate the rule by asking them to accept him with acclamation. The announcement was received with hearty applause.

The Curator (Mr. Storer Bennett) on being called upon said, that he had received two specimens, one a three-fang lower right wisdom tooth sent by Mr. Jones, of Shrewsbury, the other given by a student, viz: A crown of an upper bicuspid removed from a lady aged about 28, who complained of some neuralgic pain. In the process of examination the point of a fine probe went into a small hole, and with the slightest twist possible, the crown of the tooth came off, it was the merest shell, there was a large pulp cavity. The gentleman who operated wished to extract the root, but the lady declined to have anything further done.

The President, said that they were very much indebted for the donations, the last specimen was very interesting, the enamel was reduced as thin as a fine sheet of writing paper.

Mr. C. S. Tomes communicated a "casual" on a case of "Purulent discharge from both Parotid Glands." The patient, a lady, was attacked with typhus in about the year 1856 or 1857, during that attack she had inflammation of both glands, and since that time both glands had a tendency to secret pus. The only inconvenience that the patient suffered was that the mouth was rather dry and sticky. By squeezing the ducts one found that it still retained its power of starch conversion, and looking at the specimen under the glass it was perfectly indistinguishable from audible pus. Mr. Tomes had examined the patient's face carefully but could not find any trace of a scar. He did not know and was unable to find a record of any similar case, it was of over 30 years duration. He should mention that Mr. Mummery had been kind enough to take photographs of it, but owing to the want of day-light the negatives were rather faint.

The PRESIDENT said that Mr. Tomes' case was one of extreme interest, and they were much indebted to him, as also to Mr. Mummery, for the photographs, if any member present knew of any similar case they would be glad to hear of it.

Mr. R. H. WOODHOUSE showed models of two cases. The patients being brothers aged respectively 13 and 14½ years. It was curious that in this family there was congenital absence of incisors. Their maternal grandmother and two aunts had no lateral incisors. In one model there was an absence of one, and in the other of both lateral incisors, and in the latter also a very curious irregularity of canines; they were seated between the bicuspids, and therefore the first bicuspids were next to the central incisors, there was a considerable space on the side where the lateral incisor should have been, he did not know how to explain it, but took it that in the absence of the laterals, the bicuspids had been allowed to come forward. Mr. Woodhouse at the same time showed the lighting arrangement which he had in use in his surgery, first explaining and exhibiting a gas bracket which he had used for several years prior to the introduction of electricity. It was an ordinary bracket of great stability and large range of movement, the numerous metal joints which most brackets of this description (being various movements and a wide range), necessitated, were avoided by the adoption of india-rubber tubing stretching across the angles, the light could be raised or lowered vertically, and was also able to substitute the electric lamp for gas on the same bracket with the advantage that should one fail the other could be used. The electric lamp was of thirty-two candle power.

Mr. W. H. COFFIN asked if Mr. Woodhouse found no practical inconvenience from the fact that the light moved on a vertical straight rod, and must therefore move out of focus when raised or lowered.

Mr. WOODHOUSE replied that he found the focal area sufficiently large to make the inconvenience unappreciable.

Mr. ASHLEY BARRETT showed models which he had taken a few days previously, which represented the present condition of a girl operated upon about twenty years ago for myeloid tumour on the left side of the lower jaw. The left side of the lower jaw was removed, and it was then found that the right half had a tendency to be drawn in towards the median line. Mr. Barrett endeavoured to overcome this tendency by a mechanical contrivance, but owing to the necessity of its being kept strictly in position both night and day, and the difficulty of attaining that end, it was not very successful. He also showed models of a somewhat similar case of myeloid tumour, occurring in the mouth of a girl aged about 18 or 19. The year previous Mr. Mansell Moullin had removed the right half of the lower jaw. The girl asserted that she was unable to masticate freely, and he thought it was evident that the case was the same as in the previous case, viz., that the left half was being drawn in towards the median line. Mr. Barrett, was of an opinion that if she lived long enough, her condition would be the same as in the case before narrated. He was very anxious to prevent this condition, but he did not quite see how it was to be done; he thought in the removal of the part of the jaw, the operator had left as much of the periosteum as he could, but Mr. Barrett saw no evidence of new bone, the union was fibrous.

The PRESIDENT remarked that he felt sure similar cases must have come within the notice of members of the Society, and it would be interesting to know if they had been successfully treated, and by what method.

Mr. HERN mentioned that three or four years ago one of his colleagues, Mr. Hulke, asked him to see a private patient, for whom he had removed the right half of the lower jaw, the same tendency of the remaining half to be drawn in, which Mr. Barrett had spoken, had existed in this case. The patient was unable to antagonize her teeth. Mr. Hern made two plates completely covering the portion of the lower jaw and the teeth of the upper jaw, and drew the jaw back by elastic bands until he could make the teeth almost antagonize, but not quite. He regretted to say, that the patient had a recurrence of the disease for which she was operated upon, necessitating a further operation under which she died, so that he was unable to say whether his contrivance would have been successful in bringing about the end he desired.

Mr. LAWRENCE READ said, that he had a case somewhat similar under his care, the patient came over from Australia to be operated upon, there was an incision made on either side right up to the angle of the maxilla. The operation was successful, and the patient then came to him. He made a case in vulcanite, enlarging it from time to time, and finally made a denture with teeth on it, which, though it did not assist her in eating, prevented saliva coming from her mouth, and improved her appearance and comfort. He had heard since that it was a successful case, and now most of the mastication was done by the tongue, the power of which for such purposes was astonishing.

Mr. Ashley Barrett was obliged to Mr. Hern for the information as to how he dealt with his case, but the difficulty seemed less in drawing back the ligaments than in keeping them there.

Mr. J. F. Colyer showed a supernumerary tooth which had erupted in an inverted position. The apex was blackened and rounded in the centre, so that when looked at in the mouth it had the appearance of the root of an upper molar.

The President said that he had seen the tooth, and anyone sceptical might see that it bore decided marks of attrition, he would remind them that a short time ago Mr. Smale showed them a similar case of inverted canine.

Mr. Storer Bennett reminded the members of a specimen in the museum of an inverted wisdom tooth, he had brought the tooth with him thinking it might be interesting for them to see it in connection with this case.

Mr. H. L. Albert narrated particulars of a case of ankylosis of the jaw remedied by operation, and exhibited the patient. He stated that in 1881 the patient had an acute attack of rheumatic fever, from which he had recovered with the exception of a few rheumatic pains, from which he had not been free from since. About two years after the attack, he awoke one morning and found his jaw completely locked, it was a definite case of bony ankylosis of the jaw. He was operated upon by Mr. Howse, who excised the condyle of left jaw, and at that time, and about a month later removed about half-an-inch below the neck of the ramus. Two years ago the patient came to St. George's Hospital, under the care of Mr. Albert's colleague, Mr. Bennett, who soon after decided to excise a wedge shaped piece of bone just under the ramus. Eleven days later, Mr. Bennett operated on the right side. After the operation the central part of the jaw dropped, and all power of swallowing was lost for a fortnight. The patient had regained the power, and had in fact regained the other movements of the jaw except the lateral. In view of a short discussion which took place earlier in the year, when the severing of the ramus was recommended as a better operation than excising the condyle, he thought it might be interesting to bring forward this case.

Mr. C. J. Boyd Wallis exhibited and explained an electrical system which he had adopted for dental purposes, utilizing the supply from the mains furnished for lighting purposes. Mr. Wallis also showed some copper which he had precipitated by electricity, claiming for it the advantage over the ordinary copper amalgams, that the exudation of mercury would be obviated. He repeated the strong faith in copper amalgam as a filling which he had always had. Mr. Wallis mentioned also that he had made some experiments in the way of using electricity as a means of discovering poisons. It was well known that different poisons gave different colors, and he had great hope that electricity would prove most useful in detecting poisons in this way, though at present his experiments were in their initial stage.

Dr. Dudley Buxton exhibited an apparatus devised for carrying and administering nitrous oxide gas and ether in Dental Surgery. He said that it was very simple, and that there was little new in it, being an adaptation of an old principle. It would be convenient for using in those few cases in which it was advisable and allowable to administer what was spoken of as "a whiff of ether" in dental operations. It was an adaptation of Mr. Clover's apparatus, but so arranged that a minimum amount of ether was employed, it was very portable and easy of manipulation, it consisted of a small ether reservoir which held half-an-ounce of ether. The apparatus was supplied by ordinary tubing which carried the gas straight into the bag direct to the face-piece. When it was desired to have some ether it was obtained by turning the centre milled nut in one direction so that the gas passed over the ether and became impregnated with it. Dr. Dudley Buxton said that trial with the inhaler, experience would show that half-an-ounce would give enough anæsthesia with a very little smell of the anæsthetic, and very little discomfort to the patient. The credit for this ingenious appliance was due to Mr. Ernest Mayer.

The President thought they were very much indebted to Dr. Dudley Buxton for bringing the apparatus and allowing them to see how very portable and compact it was.

Mr. Lawrence Read wished to ask if the apparatus was intended for surgical or dental work, and whether it was intended that it should always be carried? He thought it was most undesirable that carrying ether and nitrous oxide should be made a practice of. Patients would in that way get something they did not think they were having, and being under the impression that it was nitrous oxide gas, would be liable to attribute any unpleasant symptoms which might be caused by the ether to nitrous oxide, and the latter gas would obtain a discredit which it did not deserve.

Dr. DUDLEY BUXTON in reply, said that he was exceedingly glad that Mr. Read had made the remarks which they had just listened to, because it allowed him to say what he otherwise should not have thought necessary. He entirely agreed with Mr. Read that the anæsthetic for dentists was nitrous oxide, but it had come within his experience that he was not infrequently asked by dentists to give gas *and ether*, and in these circumstances only would he employ the apparatus he then was showing. He fully agreed that it would be most pernicious to give gas and ether surreptitiously, for to his mind it would be practically acting a lie, but he did think that they were justified in giving ether in cases where prolonged operation was necessary ; he did not think that it was desirable to give chloroform, and it was with the object to avoid this that the apparatus was designed, he had no idea of palming off either on the dentist or his patient a combination of nitrous oxide and ether as nitrous oxide only.

Mr. ACKERY remarked, that at the last meeting, Mr. Woodhouse asked members of the Society if they could give him any instance of the retention of deciduous teeth after the age of 50. He (the speaker) knew of a case in which the right lower second deciduous molar was removed in April of last year from a gentleman of 63. The right lower first bicuspid adjacent to it also showed almost an equal amount of erosion, the left lower molar was still in position on the opposite side. He had another case to mention, that of a girl of 24, who had only six permanent teeth, two centrals, two premolars, aud two lower bicuspids. The remaining six teeth were all temporary ; the bite was also very extraordinary.

The PRESIDENT observed that Mr. Ackery seemed peculiarly fortunate in getting cases of diminution of teeth.

Mr. L. MATHESON on behalf of Mr. G. Brunton, of Leeds, showed a mandril for carrying emery discs, for which it was claimed that it was a compact and convenient form for carrying discs, so that the engine might be turned in either direction ; the ordinary form of carrier admitted of the engine being turned only in one direction

He also showed new forms of enamel chisels, one for opening approximal cavities in the necessary region for the lingual service.

Mr. J. Hooton, L.D.S., (Manchester), then read a paper on "A New Method of Moulding and Working Continuous Gum." Premising that he had made endless researches for many years to prepare a porcelain and gum substance which should neither shrink nor crack in burning, he stated that he had at last found a so-called body which does not crack under the highest heat and shrinks hardly at all, which he had "fired" in half-an-hour. But the object of his paper was chiefly to describe an appliance designed for the purpose of moulding teeth and gum-substances in a manner which should be universally applicable to any form of mouth or gum, and with a series of matrices of different types of teeth it would now be possible by a simple method to adapt the one to the other by one process. This process he claimed was equally applicable to gold plates or to vulcanite *without the use of platinum*, so that either partial or complete sets could be mounted just as easily as one, and Mr. Hooton hoped to be able to demonstrate that the actual firing should take a less time than vulcanizing.

First, the preparation of the matrices ; these are made by moulding different sets of various types and sizes in wax, about 7 or 8 types being sufficient for ordinary work. These wax patterns are not fitted to any gum outline, but simply contoured to the form of an upper and lower maxilla, and are made quite flat on what would be called the gum surface. This forms the male part of the mould which is cast in plaster of Paris in two parts. The parts are trimmed into shape so as to be reproduced in brass or gun-metal, and clamped together by pins; on the upper surface a metal plate is cast like the lid of a vulcanizing flask except that it has three counter-sunk holes and a central hole through which passes a screw upon which a winged nut works to clamp the whole in one. The outer part of the matrix is hinged in three plates. The apparatus is used as follows:—A Universal Articulator is prepared, and into it is set by screws the zinc model of the case to be treated, upon this is placed a very carefully trimmed wax bite of the exact dimensions and outline of the future plate. Around the outside of this is adapted a soft brass plate which can be thoroughly moulded to its external outline, and which works on a movable articulating frame, which is removable and replaceable in its exact position. This indicator is adjusted approximately so that its edge shall be in the same plane as the edge of the bite, and its inner surface is adapted to the outer surface of the bite.

The wax bite is now removed and the wax counterpart of the inside of the brass mould most suitable to the case is made by pouring melted wax into it. This has a flat surface on the gum margin as before described, and it is adapted to the zinc model by simply heating it sufficiently to run down the wax until its masticating surface is parallel to the edge of the indicator. Before the zinc is heated it is needful to remove the articulator so that it does not get hot with the zinc.

The wax bite has now been obtained with an outline of teeth and gums just as it left the matrix, but its gum surface instead of being flat is an exact counterpart of the zinc model. It is now returned to the brass mould and fusible metal is melted and poured in through one of the three holes in the lid which are counter-sunk. It is desirable to put a small piece of tissue paper on the wax just where the metal is poured in so as not to melt the wax unduly at that point. The matrix is quickly opened by withdrawing the pins, and the wax removed. It is necessary that parallel holes should be drilled in the lower part of the matrix for the pins to be passed through. Slits should also be sawed in the mould behind the canies on each side so that strips of thin brass can be slid in to divide the mould into three parts. In the pin holes are inserted pieces of steel knitting pins of pivot-wire gauge, on to them are fitted the platinum tubes. A plate of copper is put under the matrix to prevent the pins dropping out subsequently. The mould is now clamped with the exception of the lid, and the body is packed in a moist condition, so that it can be shaken down into the mould. The lid is now placed upon it, hammered down and finally screwed home by the winged-nut. The mould is now placed under the gas-heater, and left until the fusible metal runs out. The outer part of mould can then be removed, and excess trimmed away from the blocks. Next the gum surface should be painted with gum enamel, and the necks of the teeth themselves tinted with suitable colours if necessary. After drying for say half-an-hour, the blocks are ready to be fired. The muffle should not be closed until the oil and starch are driven out.

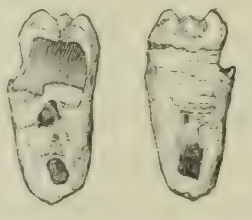
At the close of the Meeting Mr. Hooton more fully explained this paper by diagrams and models. The Meeting then adjourned.

Odonto-Chirurgical Society of Scotland.

THE First Meeting of the Session, 1891-2, was held in the rooms of the Society, 5, Lauriston Lane, Edinburgh, Mr. G. W. WATSON, L.D.S., President, in the chair.

Mr. WILSON exhibited a model of alveolar cleft, unassociated with cleft palate. The cleft ran right through the alveolar border to the side of the mesial line, but not in the line of juncture of the maxillary and intermaxillary bones. Mr. Wilson had shown the case to Professor Sir William Turner and others, but so far as he could ascertain, the case was unique. He also showed the model of an adult, in which the lower left second temporary molar was persistent, and being a large one, gave, at a superficial examination, the appearance of an extra permanent molar tooth, the three molars being all present.

Mr. R. H. CUMINE, L.D.S., of London, tendered the following communication through Mr. Macleod—



The tooth here illustrated is a left lower dens sapientiæ, and was extracted under gas by means of the elevator on April 6th, 1891. Almost immediately on regaining consciousness, the patient said, "has my lip dropped ?" explaining that he could not feel it. The bleeding was profuse, but not alarming, a fearful paroxysm of pain commenced forthwith, and lasted without intermission for about 8 hours. Bleeding ceased in about 10 minutes, with the exception of a little oozing, but there was no secondary hæmorrhage. Examination of the tooth at once disclosed the real nature of the case, viz :—rupture of nerve and artery, and the patient being an intelligent man, was satisfied with the explanation given.

It appears the tooth had been a source of trouble off and on for some time previously, two dental surgeons, it is stated, having declined attempting its removal. At these times, the tooth would become uneasy, with slight swelling, and partial or complete loss of sensibility in the region of the mental nerve. This loss of sensation would, at these times, be very erratic, frequently being induced spontaneously, even by a glass of wine, the excitement of discussion, or the recumbent position.

At last, on taking cold, a deep-seated abscess was formed with indurated masseter, and on opening, there was a copious discharge of pus. On recovery, the medical man, in whose care he had been, strongly urged the removal of the offender. It is now seven months since this was effected, and the present symptoms are as follows :—There is absolutely no feeling in the lip from the mental foramen to the symphysis, the area of insensibility being definitely circumscribed, and the borderland, so to speak, acutely impressionable to touch. Concussion at this part, or contact of acids of any description induce a sensation of cold similar to that produced by menthol. Digital manipulation of the dental ridge (which is denuded of teeth from the first bicuspid backwards), produces a sensation as of vibrating wires. Whether this may be hailed as an effort of nature to re-establish sensory impression I cannot say, but the history of this case, as being somewhat allied to that quoted by Salter *vide* Pathology, page 354, seems to preclude the probability of a complete recovery.

Mr. DURWARD said, some time ago he had a visit from a patient from whom he removed a third lower molar. After the operation, the patient complained of numbness and loss of sensation in the region anterior to the mental foramen. He had no doubt in his own mind that it was caused by injury to the nerve during extraction. Happily, in a day or two, all unpleasant symptoms disappeared. Mr. Durward also drew the attention of the members to a specimen in the museum, with roots deeply notched for the passage of the inferior dental vessels.

The PRESIDENT remarked on the interest attached to such cases, and said that paralysis of one side having occurred, pointed to the fact of implication of the inferior dental nerve, and reminded the members of a case he had in his own practice when the same result was produced after the extraction of second inferior pre-molar.

The SECRETARY read a letter he had received from Mr. Robert Hepburn, of London, respecting a gift he had made to the Society of a framed collection of photograph portraits of eighteen of the Presidents of the Odontological Society of Great Britain, arranged in reference from 1856-7—1874. The letter was listened to with much appreciation, as coming from one of the earliest members of the Society, and one who, from its commencement, had shown, by his handsome donations to its museum from time to time, a kindly and most practical interest in its welfare.

The PRESIDENT moved, and Mr. Wilson seconded that the sincere thanks of the Society should be tendered to Mr. Hepburn for his kindness, and that the form it should take should be an excerpt from the Society, after which the President delivered his inaugural address.

A vote of thanks, proposed by Mr. Wilson, and seconded by Mr. Macgregor, was carried, in which Mr. Watson was thanked for his able and scientific address.

The Second Ordinary Meeting was held on December 10th. Mr. G. W. WATSON, President, in the chair.

At the conclusion of the formal business the Secretary read a letter he had received from Mr. Robt. Hepburn, in which that gentleman expressed his pleasure and gratification at the way in which his recent gift had been received by the Society, as evidenced by the excerpt from the minutes which had been forwarded to him.

Mr. TURNER then read "Some Notes of a Case of Replantation. (See page 20.)

The PRESIDENT remarked that a good number of years ago, he had under antiseptic treatment replanted teeth in a number of cases, and had the good fortune to remove two of them, the one four years the other seven years afterwards, and found as in this case that a considerable portion of both roots M $\frac{0}{1}$ were destroyed by absorption, which sooner or later is the inevitable in all such cases, even although all precautions are adopted.

Mr. WILSON exhibited an upper model (hospital patient) shewing six incisors. The two extra laterals were in the arch between the normal laterals and the mesial line, and one of them had a lingual cusp. Both centrals and one canine were outside the arch.

The PRESIDENT showed two photo-micrographs, which he had taken of sections of a chronic alveolar abscess sac. One of them demonstrated clearly the lining membrane of the interior of the sac (pyogenic membrane of the older uritus) which was shewn to be composed of cells analogous to collumunar epithelium. The other exhibited well the structure of the walls of abscess sac, viz.: a reticulum of coarse fibrous tissue. Mention was made of the difference in structure between the acute and chronic forms of abscess sac.

In introducing Mr. Turner, the PRESIDENT said, he was sure they would be all glad to see one of the more recent members of the Society, coming forward with communications to the Society. There seemed to be an idea among the younger members that any contributions they would be disposed to make, would not receive due consideration, this he assured them was a mistake, and he in his Presidential capacity, would be only too pleased to further to the full extent of his power, any effort they might make on the Society's behalf, and he was sure all the encouragement possible would be given to them to come forward with contributions to the transactions, as upon them will devolve at a later period, the carrying on with efficiency and success the business of the Society.

Mr. TURNER then read a paper on "Some Modifications of Continuous Gum Work." (See page 17.)

The paper was listened to with much appreciation, most of those present joining in the discussion which followed either by questions or remarks.

In closing the discussion on Mr. Turner's paper the President said that he admired the beauty and artistic appearance of continuous gum work, and having, through the kindness of Mr. Turner, seen his furnace and method of working was surprised at the facile manner in which he made up his pieces, and the rapidity with which it could be done in comparison with the older methods. The low fusing gum allowing the work to be more expeditiously executed. The only difficulty, as Mr. Biggs has pointed out, is that of getting workmen to properly carry out work of this description, as good workmen are getting scarcer every year.

Mr. TURNER received and acknowledged the hearty thanks of those present for his paper.

The PRESIDENT announced that the next meeting would be on Thursday, January 14th, 1892, and the proceedings terminated.

Edinburgh Dental Students' Society.

ON the evening of the 2nd of November, the Edinburgh Dental Students' Society resumed its meetings for the Winter Session.

The syllabus drawn up is an interesting and comprehensive one This, together with the greatly augmented membership, arising from a large increase of students attending the hospital, gives promise of a most successful term under the presidentship of Mr. Herbert B. Ezard, L.D.S.

The opening night was reserved for the Honorary President's inaugural address, and Dr. Melville's lecture on "Hypnotism, with Demonstrations, with regard to it as a Therapeutic Agent."

Mr. Andrew Wilson, L.D.S. (lecturer on Dental Anatomy), whom the Society is fortunate in having as Honorary President for the current year, addressed a crowded meeting, choosing as the subject of his inaugural address, "The Missing or Suppressed Teeth in Man." As leading up to his subject he emphasised the importance of acquiring habits of accurate observation, as a great amount of literary dental work consisted simply of recording observed facts and from them forming hypotheses. The speaker in his address successfully demonstrated what he contended for, in showing how from carefully tabulated observed facts his hypothesis of the missing incisor and premolars in man was evolved.

The Honorary President was accorded a cordial vote of thanks for his address, and Dr. MELVILLE was then called upon for his lecture on

"HYPNOTISM OR PSYCHO-THERAPEUTICS."

In introducing his subject he gave a cursory glance at its history from the time it was practised 2000 years ago till 1773, when it was espoused by Mesmer, who claimed for himself the possession of a peculiar power. Dr. Melville pointed out that from then it had gradually undergone development by the investigations of scientific and learned men, and now had recognised schools on the Continent, where particular methods for inducing the hypnotic condition were adopted. In defining hypnotism as "the induction of a peculiar psychical condition which increases the susceptibility to suggestion," he took the opportunity to demonstrate on three subjects the various methods adopted by the schools at Paris and Nancy, presided over by Charcot and Liébault respectively. In the first case he adopted the method known as "Braidism," by which hypnotism is induced by *physical impressions*. In the second case, hypnotism was induced by *psychical suggestion*, and the two methods combined were used to induce the hypnotic condition in the third case. Regarding hypnotism in its therapeutic aspects, Dr. Melville did not claim for it much importance in the surgical field, believing that it will ever be held secondary to chloroform and other anæsthetics, but strongly advocated its use as a curative agent in diseases of a nervous or mental character, which do not indicate any organic change, and among others mentioned, functional neurosis, headache, alcoholism, stammering, perverted sexual feeling, and railway spine. In support of his claim for it as a therapeutic agent, Dr. Melville performed several interesting experiments and called attention to the condition of the subjects, and the symptoms evidenced as they passed through the three successive stages of hypnotism, recognised as the cataleptic, the lethargic, and the somnambulistic. Among many interesting demonstrations, some of which partook of a popular character, he showed the power of suggestion on the hypnotised subjects, by causing blindness, deafness, toothache, earache and neuralgia, and restored the subjects to their natural condition by the same means, that of suggestion. For one subject in the somnambulistic degree of hypnotism, Dr. Melville desired that Mr. G. W. Watson, L.D.S., (lecturer on Dental Surgery) should extract a tooth, the demonstrator suggesting to the patient that he would feel "no pain." Mr. Watson readily consented and after extracting the tooth (which was considerably decayed), exposed the canals and found the nerves alive in the apical portion. On the patient resuming his normal condition, he gave unmistakeable evidence of being totally ignorant of, and insensible to the operation. Continuing his demonstrations, Dr. Melville dealt with "Post Hypnotic Suggestion," and showed how a suggestion to one subject while in the hypnotic state, that he stammered, and to another, that he had paralysis of the arm, were retained by the subjects when restored to their normal conditions, and Dr. Melville explained how in the same manner a patient who in his normal condition, suffered from stammering, etc., could be hypnotised, and suggestions of a healthy state given that would likewise continue after return to the normal condition.

In concluding his lecture, Dr. Melville combatted the arguments against its adoption as a therapeutic agent, and maintained that it was less dangerous than the use of drugs, and refuted the idea of its having a tendency to cause hysteria. He was willing to admit of an increased tendency on the part of the subject to again fall into the hypnotic condition, and the lecturer also pointed out that the taking advantage of patients or abusing their confidence could only be obviated by having operators who were skilful, conscientious, and honourable.

On concluding, Dr. Melville was heartily thanked for his able and interesting lecture.

The Dental Hospital of London and London School of Dental Surgery.

THE Staff and Past and Present Students of the above Institution dined together in the Venetian Saloon of the Holborn Restaurant on the 5th ultimo.

MR. DAVID HEPBURN occupied the Chair, and was supported by several distinguished members of the dental and medical professions. About 120 sat down.

Due honour having been paid to the usual loyal Toasts, the Chairman proposed the Toast of "Past and Present Students." He felt that a great deal might be said upon the subject, but he appreciated the wisdom which had prompted the shortening of the Toast List, so that more time might be given to conviviality and enjoyment, and with the view of aiding the framers of the list, he would not detain them long. It afforded him great pleasure to propose the Toast, because he had been a Past Student and was a Present Student, and he hoped to remain a Student of the Hospital as long as he remained in connection with it. It was impossible to look at an organisation of this kind without contrasting the past with the present, and he could not help looking back to a somewhat distant date, viz., 1860, when he attended one of the first lectures delivered in that hospital, then situated in a quiet corner of Soho Square. The Institution was founded by the Odontological Society, and he remembered on the occasion of that first lecture, the lecturer looking round on the empty benches and quoting a story related of John Hunter, of whom it was said, that when giving his first lecture at the Royal College of Surgeons, he told the porter to bring in the skeleton and place it beside him (the porter), so that he might, at least, commence his lecture by saying, "Gentlemen." The benches of their Institution did not remain long empty, and its reputation rapidly spread, so that students came from all parts to listen to the wise teaching of such men as Cartwright, Ibbetson, and his (the Speaker's) father, to listen to the demonstrations of Mr., now Sir John Tomes and Mr. Thomas Underwood. To-day, with their numerous organizations, their hundreds of students, and their hundred thousand cases, they might say that the growth of their institution was quite phenomenal, and it was a proud thing, thereore, to be able to count oneself its student. Referring to the obstacles that they had had to contend with, and especially quackery, he felt that there was only one way in which this could be overcome, that was by the steady onward march of education. It was therefore a matter for great satisfaction to those who were at the present time connected with the Hospital and School that they might reflect that they were sending men out into the various parts of the world, who, by their education and training, might prove towers of strength to withstand methods which all professional men condemned. There were many questions which one might touch upon; everyone had been struck with the apparent severity of the examinations, and very many lately had been politely referred to their studies, but on looking at the matter again, they would but congratulate themselves on thinking that the apparent severity was really one of the greatest blessings, as it provided the best means for counteracting the growth of quackery, it assured them that they had a pure board of examiners, who were determined in no way to lower the standard of the examination. Referring to the students, he felt that the success of their institution was due to their enthusiasm, which was never greater than to-day. Referring to the peculiar position of the profession at the present time, he alluded to the numerous organizations which were at work, and which provided everyone with an opportunity of doing something on behalf of the best interests of the profession. In conclusion, he was reminded of a physician who used to commence his lectures by describing a dinner party, and showing how various dishes would affect the different constitutions, but they might all taste of the dish of good fellowship and drink of the cup of kindness which would strengthen their feelings of affection towards their Alma Mater, and, though they could not all be Tomes', or Turners', yet it was within the power of everyone by joining one or the other of their organizations, by co-operation in one way or another to do something to help forward the interests of their profession. One duty only remained to him, and that was to couple the names of Mr. Rees Price and Mr. Gracey with the toast. The former had gone across the border, where he was worthily representing the best instincts of the profession, the latter was a Saunder's scholar and a distinguished student.

Mr. Rees Price, in responding for the past students, said that since leaving the hospital in 1881, it had been his lot to live in the second city of the empire (Glasgow). He noticed that of the surgeons on the staff who took an active part in his day, the only one left was Mr. Gregson. It was about the time that he entered the profession that it obtained its status, and the advance that it had since made was to him very remarkable. In those days two hospitals were sufficient to meet the demands of both students and patients, but now each leading city had its own dental hospital, and several of them had more than one; these facts alone showed the wise forethought of those gentlemen who obtained their charter for them. They must all hold dear and watch with interest all that went on in the Dental Hospital of London, and hope that she might always remain in the van of dental educational progress.

Mr. Gracey briefly responded for the present students.

Mr. Trimmer, on rising to propose the Toast of the "Hospital and School," was very heartily received, said that he had had the pleasure of knowing the school since its initiation, and had watched its progress with great interest. The Chairman had mentioned the the name of Sir John Tomes as one to whom dentists owed a deep debt of gratitude for the professional spirit which he had cultivated and inculcated; at the present time they had in their worthy Dean one of the best men they could have for continuing that spirit.

Mr. Morton Smale, who was received with loud cheers, in responding, desired to express his thanks for the very kind and enthusiastic way in which the toast had been received. He should like in the first place to thank them for having drank the health of the "Hospital Proper." He wished to say that the Managing Committee was anxious to promote the usefulness of the hospital to the greatest extent; sometimes it was said that that Committee put on the brake, but it must be recognised that brakes were sometimes very useful things; if they were to go forward only a little too fast, they might have an awkward spill, and he thought the Committee were quite right in the course they adopted, but he was certain that they were anxious to promote the general usefulness of the hospital, and for that reason he thought that what might be called the charity side of the hospital was deserving of the support, not only of the public, but also of those gentlemen who were qualified within its walls, gentlemen who go out into the world and make money and are able to become subscribers to the school. With regard to the school, he should like to refer to the loss they had sustained in the retirement of Mr. Claude Rogers and Mr. Lawrence Reed from the staff. In Mr. Claude Rogers they had lost a pillar of strength, but, nevertheless, he was sure there were men willing to come in and fill his position with the same enthusiasm with which he had occupied it. Referring to the inter-dependence of the hospital and school, he reminded his hearers that it was impossible for the one to succeed without the other, for the school carried on the work of the hospital. The main part of it was done by the students, and this he thought a very important point to notice, for, if they looked at the medical profession, they would find that the students very rarely perform operations, but with the dental student it was quite different, so that if he has done his work with anything like regularity, when he has completed his course and taken his diploma, he is a first rate operator, and ready to do all the operations that come to him. The advance of the profession had been alluded to, he thought there were two kinds of advance; first, the advance in scientific knowledge, and he thought that all, or nearly all, the advances in that direction had originated in the Dental Hospital of London; the other kind of advance was social, and in that respect, too, those who remember what the profession was 20 years ago would admit that their advance had been very great. He thought that the levelling up of their profession had originated in the Dental Hospital and School, and he did hope that in the future they might go on levelling up as they had done in the past. In this connection he would quote some lines of Thackeray,

"Who misses or who wins the prize,
Go, lose or prosper as you can,
But if you fail or if you rise,
Be each, pray God, a gentleman."

Mr. Leonard Matheson, in proposing the Toast of the Visitors, said that no English dinner would be complete without its visitors, and he felt sure that it needed no words of his to obtain for the Toast an enthusiastic response. Among the visitors they had many personal friends, there were others who did honour to the School by their presence, and again, others whom they were glad to see because in their presence they felt they were doing honour to the institutions which they so worthily represented. He begged to couple the name of Mr. Henry Juler with the Toast.

Mr. Juler responded.

Mr. Arthur Underwood proposed the health of the Chairman. He said that Mr. Hepburn had told them that he had been a student, that he was a student, and hoped always to be one. He (the speaker) believed that he was selected for the privilege of proposing the Chairman's health because he was supposed to know a good deal about him. Mr. Underwood then spoke in warmly eulogistic terms of the Chairman's professional and private characteristics.

THE DENTAL RECORD, LONDON: JAN. 1, 1892.

"CLINICAL NIGHTS" AT THE SOCIETIES.

"THAT all things change while nothing perishes," is a saying as old as the Roman hills. It is, perhaps, a tremendous and crushing thought for some of us, that our "things of no worth" go ricochetting over the universe, while seasons come and go, and yet so it is. But, while the scenes and sounds, say of Cicero's Rome, are again enacted and heard in this London of to-day, a modern Horace, telling of scheming mammas and foreseeing daughters, as of old by Tibur's banks, a modern Livy narrating of storms by sea and portents by land, all very much as of old, save perhaps the manner of men and the cloaking of ideas in modern guise of words. The gist of the matter is, as was said, that while all things change, the things still persist. Were it possible to know the bearings of the age in which one lives, we should say to-day was the epoch of practicality. Formerly, the grass to which we ephemeral men are likened, was allowed to fade decently and lingeringly through the genial action of the sunshine; but, alas, to-day it is cut and dessicated and generally done for by machinery, and so its day is shortened: hence, life to us is no longer a procession of time, it has become a rush of moments. Admitting the breathless haste in which Nineteenth Century mortals live and move, and have their being, we become impressed with a vague longing to make the most of what goods the gods send us, we eschew the sober picking of bones and fly to meat extracts and concentrated essences. The material and the mental sides of our nature are certainly not at variance in this matter, and so it happens that while our physical digestion craves for a diet of little and often, so does our intellectual appetite assimilate a pabulum wherein brief, pithy statement of facts replaces excursuses, massive in form and bristling in erudition. Certainly one of the greatest improvements of these latter-day things has been the substitution of short clinical histories for the older-fashioned academical papers in which our forefathers revelled. Of course, formal papers have their own value and serve a very useful purpose, but for the requirements of practical men, such as dentists are, such evenings as the one which the Odontological Society devoted at its last meeting, to "Casual Communications," have great attractions. It is given but to few men to compose an elaborate paper, there are, however, few who cannot stand up for ten minutes and describe some case of uncommon interest or some time-saving device, so that the burden of supplying material is less on casual nights. Perhaps it would be hard to find a better end-up for an interesting practical evening than that which Mr. Hooten contributed at the meeting in question. A reference to our "report" will show how admirably practical and to the point Mr. Hooten's remarks were. As "one of the crowd" it is not for us to offer advice, bnt we may, perhaps, offer our congratulations to the secretaries for the excellent programme of the meeting, and even express a hope that there may be several more such evenings in store for us.

With this issue we commence a New Year, and we congratulate our readers upon it and offer them all felicitations. We would add that we hope during 1892 the DENTAL RECORD will be conspicuously useful, and to further that end we shall greatly appreciate help from our large circle of friends. A brief case, a fresh observation jotted down, anything, however brief, *if practical*, will prove acceptable. Everyday some useful hint is lost because the originator does not commit it to writing. Let everyone please have it "rit large" on his memory, "Happy thought! will send it to the DENTAL RECORD." A Happy New Year all round.

Discovery is a most excellent little paper, it contains more useful hints and fewer words than any journal of its kind we know. Instead of being a 3d. monthly it is to be one penny a week. Anyone interested in the world of invention, applied mechanism, and general information about designs, appliances, electric lighting, &c., should see it.

Journalistic Memorabilia.

International Dental Journal.

CORROSIVE SUBLIMATE AS A DISINFECTANT AGAINST THE STAPHYLOCOCCUS PYOGENES AUREUS.—A. C. Abbott (*Hopkins Hospital Bulletin*, No. 12, April, 1891) publishes the results of tests made upon cultures of the staphylococcus pyogenes aureus with a 1 : 1000 solution of corrosive sublimate. Abbott finds that the disinfectant power of corrosive sublimate in the above concentration, when tested by methods which exclude the carrying over of minute quantities of the disinfectant, is not so great as has been claimed. He holds that in many of the experiments heretofore made to test corrosive sublimate the latter has been assigned a higher rank than it deserves, because some of it has been transferred to the culture medium, and has inhibited, but not destroyed, the growth.

His experiments were made upon liquid cultures containing sterilized sand. With cultures of this sort he was able, by filtration, to get a better distribution of the organisms in the liquid, avoiding microscopic clumps, which might interfere with the action of the disinfectant upon the organisms, in the centre. Suspensions in water were also used, also filtered. Fresh cultures and fresh solutions of corrosive sublimate were used, of course, in every case.

Abbott finds that the number of organisms makes a difference in the efficacy of the disinfectant. The greater the number of organisms the more difficult the disinfection. Cultures vary in their resisting power,—organisms from one culture resisting better than those from another. Cultures in beef-tea resist better than suspensions in water. Organisms which remain alive after the action of the disinfectant are retarded in their growth and are weakened in virulence. Corrosive sublimate, in the proportion of 1 : 400,000, retarded growth in cultures of boullion containing peptone; 1 : 600,000 with peptone.

The staphylococci, which have been attenuated by the action of the sublimate, regain their virulence when cultivated for some time on ordinary culture media.

TURPENTINE AS A GERMICIDE AND ANTISEPTIC.—Although the oil of turpentine (*oleum terebinthinæ*, U.S.P.) is not unknown as an antiseptic and germicide, its insolubility in water and irritating properties have hitherto made its use impracticable. That it has its special uses, however, in this connection, I have had abundant testimony.

It is a well-known fact among naturalists that, if the air of a cabinet be impregnated with the vapour of turpentine, the specimens are safe from the ravages of moths and like intruders so long as this condition of the air of the cabinet remains.

Having learned the advantage of turpentine in preserving entomological specimens, I concluded to try its germicidal properties in cases containing surgical instruments. A bacteriological examination made four weeks afterwards, and compared with the examination of cases not provided with turpentine, convinced me of its efficacy, and I soon afterwards applied the same principle to drawers containing towels, gauze, bandages, &c.

The method is simple. The turpentine is placed in flat, large-mouthed bottles at the bottom of each case or drawer, the volatility of the turpentine causing the vapour to impregnate the surrounding air.

Of late I have also placed my surgical instruments the night preceding an operation, in a flat dish containing oil of turpentine. The instruments are completely sterilized, are not injured by the submersion, and are easily dried by a piece of sterilized gauze or towel. The characteristic odour of turpentine can be removed by ether.

The cheapness of turpentine, and the ease with which it may always be obtained, added to its special adaptability in preserving the aseptic condition of instruments, bandages, etc., by its vapor, may make it a valuable addition to the list of antiseptics and germicides.

I have also used benzol in the above manner. Its greater volatility gives it a more rapid germicidal action than turpentine, but its great inflammability admonishes caution in its use.—W. SCHLEPPEGREL, A.M., M.D., New Orleans, in *Medical News*.

Selection.

ANTRAL ABSCESS AS A RESULT OF ALVEOLAR ABSCESS.

(Abstract.)

By Dr. M. O. Cooley.

I am about to discuss with you the treatment of antral abscess as the result of alveolar dental abscess, which we as dentists are most frequently called upon to deal with. With antral abscess, as with other diseases, different practitioners employ different methods by which they arrive at the same results.

I have endeavoured to formulate the teachings of my experience, together with what I have read on this subject that seemed practical and to the point, and I give it to you with the earnest desire that you shall discuss it freely.

Before entering into the details of this subject, it may be well to review a portion of the anatomy and physiology of the antrum and the parts associated with it, for the purpose of refreshing our minds.

The antrum of Highmore is an irregular, triangular-shaped sinus, situated in each of the superior maxillary bones, with its base facing the nose, and its apex the malar process. The floor of the orbit is its roof, and the alveoli of the molar teeth its floor ; its only opening is a small foramen, starting from its base or nasal aspect, opening into the middle meatus of the nose, and has as its boundaries portions of the turbinated, ethmoid, and palate bones. The size and shape of the sinus varies to quite an extent in different individuals; in fact, there is often a marked difference in the right and left sides of the same individual. It is said that the average-sized antrum will contain about one and a half fluid ounces. It is larger in the male than in the female, having thicker, stronger walls. In an adult it diminishes in size as age advances or if the teeth are lost.

It is not at all infrequent that there are one or more septa of bone in the floor of the antrum, which, in case of disease, add very much to the difficulty of its treatment.

It is lined with a mucous membrane, which is continuous with that of the nose and the mouth. The antrum in a normal state indirectly communicates with the frontal sinus through intermediate cavities, known as the ethmoidal and sphenoidal cells, and the mucous lining of the antrum is also common with these cavities.

The mucous membrane lining these cavities is made up of ciliated cells, a provision of nature by means of which the antrum is enabled to rid itself of secretions which would otherwise accumulate and become offensive.

The relationship which exists between the teeth and the antrum has been found by many of us to be a close one, as in many instances the roots of one or more of the teeth penetrate the floor of the antrum.

There are many lesions which the antrum is heir to, but the one most frequently met with is the result of a broken or abscessed tooth, usually a second bicuspid or first molar. There may not be any great amount of pain in the teeth, but there is a sense of fullness, a pressure in the face which, as the engorgement increases, becomes almost unbearable. A sense of fullness and pain is also very pronounced in the frontal sinus.

With these symptoms in view, the first consideration is to remove the root or tooth, which we will suppose has abscessed, the pus from which has found its way into the antrum. This will usually afford an opening through which the accumulation of pus will find an outlet, whereupon the pain in most cases will subside ; but the treatment does not end here, for until nature has made the necessary repairs the secretion of pus will continue, and it is imperative that the opening be large enough to accommodate a tube of gold or silver, which shall be at least one-quarter of an inch in diameter. After the drainage-tube is in place, a clasp-plate should be adjusted to the adjoining teeth, which will serve to keep food from finding its way into the antrum.

In cases where trouble has existed for some time prior to treatment, necrosis is very liable to be present, and should be carefully looked for. If there should be any, it is usually found near the tooth or root which has given rise to the trouble, and in this location is easily removed by use of the dental engine. If necrosis is suspected of having made any progress within the antrum, a simple means of detecting it is to stuff the cavity full of absorbent cotton, allowing it to remain until it has swollen by the moisture it will absorb, until it fills the cavity in every part, when it may be removed. If there be no necrosis, the cotton will not pull apart and catch on to the walls of the antrum, as the mucous membrane will be unimpaired and there will be no exposed and rough surface of the bone to become entangled in the fibres of the cotton, as would be the case should necrosis exist. However, anyone with sufficient experience can with a probe readily detect necrosed bone, but I consider the cotton, in the hands of the inexperienced, the safer and more reliable.

Now the question arises, How shall we deal with the necrosed bone? In some cases it may be necessary to make the opening sufficiently large to admit of its removal by surgical means, but in the majority of cases this is not necessary, for by administering systematically a tonic treatment, such as syrup of hypophosphites or cod-liver oil, and wholesome diet, in conjunction with local treatment, which shall be stimulant and disinfectant, the sequestra will be exfoliated and repair will take place without an operation. Our homœopathic brethren claim gratifying results from high potencies of silicia, calcaria carbon and phosphorus.

The progress made in cases of long standing is often very slow, sometimes requiring several months of careful and persistent treatment, while those which are taken in hand in the early stages are by far less obstinate, and the possibility of effecting a permanent cure is proportionally more flattering.

I have no doubt if we were to examine the sockets of all the superior first molars we extract, that the number whose roots are found to perforate the floor of the antrum would astonish us, and we would marvel that there are not more cases of antral abscesses than there seem to be.

I am led to believe that in not one case in ten, antral abscess follows the extraction of a tooth whose roots perforate the floor of the antrum. The temperament, general health, and recuperative power of the patient have a very strong bearing on this point.

Nasal catarrh offers serious resistance to the treatment of what might otherwise be simple cases to handle, especially in this damp climate. Owing to the catarrh, the mucous membrane of the nose becomes hypertrophied, closing the natural outlet of the antrum, thereby rendering it impossible to close the artificial opening. Moreover, the inflammation is more difficult to control. It is well understood that an inflammation once begun in the mucous tract has a tendency to spread and involve other organs having the same lining.

For example, a child who is erupting teeth has an inflammation, which is at first circumscribed, of the gum-tissue surrounding the tooth about to erupt. Gradually it becomes diffused, affecting the mucous membrane of the mouth and fauces, and in many instances the whole mucous tract, causing diarrhœa, convulsions, and sometimes death. The mucous membrane of the antrum bears a similar relation to that of the nose. The mucous membrane of the antrum is low in vitality, as a result of the abscess, and has no power to resist the inflammation from the nose. As a consequence we have a very stubborn lesion to deal with.

In his system of oral surgery Dr. Garretson states that "The antrum once fully and fairly opened in the floor region, a practitioner is not to attempt its closure. As a rule it will not close, and the writer's experience impresses him that closure, as a rule almost without exception, is the worst thing that can happen. Once fairly exposed by a break in its floor, an antrum never again physiologically voids itself through the nose, the reason for this being that the ciliated expression of the antral mucous membrane has lost its office as a result of the disease that caused the opening."

This statement does not apply to cases where teeth have been extracted, whose roots have penetrated the floor of the antrum, where the disease existed prior to the extraction of the tooth, for as a rule these cases will readily close, provided the outlet into the nose is unobstructed. Hence the importance of getting the catarrhal affection under control at the earliest possible moment. Situated as we are in the lake region, with its damp climate, catarrh is more or less prevalent, and anything like a permanent cure is to be obtained only by going to a higher and dryer place, *and never returning*. I may have put this somewhat strongly, but I have just been treating a case of this character, and my efforts were unavailing until such a change was made, when improvement began, and in a short time the trouble was apparently over. When patients present themselves for treatment they are usually more or less run down systemically, as the result of suffering, loss of sleep, absorption of pus, and the consequent loss of appetite. They should be placed under tonic treatment, as before described, and should take plenty of exercise in the open air. Their diet should be that which is most wholesome and nutritious.

In the local treatment of this condition, cleanliness is of the first importance. The chances of recovery are far more encouraging where cleanliness alone is observed, than where the most skilful medication is practised without regard to cleanliness.

The remedy for cleansing purposes which has proven most efficacious in my hands is Marchand's peroxide of hydrogen, thrown into the cavity by means of a syringe. This should be followed by injections of a solution of sulphate of zinc, one or two grains to an ounce of water. If there should be much pain, one or two grains of chloral may be added to each ounce of the solution. There are other remedies which may be equally good, such as a mild solution of carbolic acid in glycerine and water, listerine, or sanguinol, used with an atomizer. Some practitioners advocate the use of sulphuric acid creasote, nitrate of silver, and other escharotics. There may be cases in which they are indicated, but experience of others has taught me that they do more harm than good. We can easily appreciate that where we have an unhealthy granulation these remedies come in very happily where judiciously applied, their use to be followed by mild stimulant and tonic treatment.

Antral abscess, like chronic periodontitis, demands slow and persistent treatment, with mild, soothing medicaments.

Dental Cosmos.

APPOINTMENTS.

T. E. Sherratt, L.D.S.Eng., late Assistant House Surgeon by examination, has been appointed House Surgeon to The Victoria Dental Hospital, Manchester.

Mr. W. Reginald Roberts, L.D.S. (Lichfield), Hon. Dental Surgeon to the Hammerwich Hospital, Hon. Assistant Dental Surgeon to the Birmingham Dental Hospital, has been elected Hon. Dental Surgeon to the Girls' Industrial School, Staffordshire.

Monthly Statements of operations performed at the Dental Hospital of London, Leicester Square, and the Victoria Dental Hospital of Manchester, for November, 1891.

		London.	Manchester.
Number of Patients attended		—	1,165
Extractions	Children under 14	328	787
	Adults	1,077	
	Under Nitrous Oxide	911	
	,, Anæsthetics	—	129
Gold Stoppings		586	73
Other ,,		—	186
Plastic		1,167	—
Irregularities of the Teeth		—	37
Artificial Crowns		32	21
Miscellaneous		729	237
		4,830	1,470

THE DENTAL RECORD.

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Original Communications.

THE WORKROOM AND ITS TOOLS.

BY W. BOOTH PEARSALL, F.R.C.S.I., Dublin.

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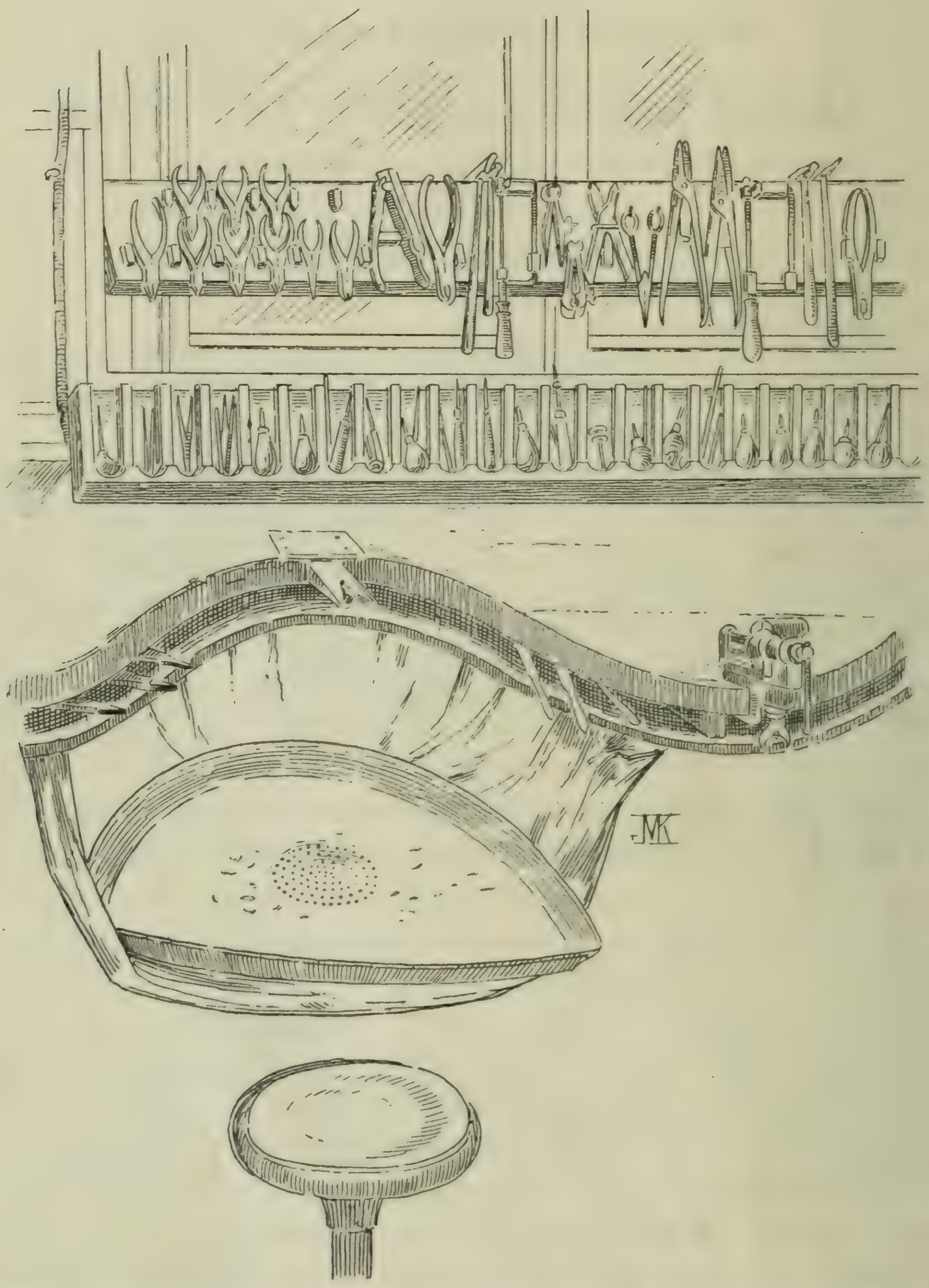
HAVING placed the general plan of a workroom before the reader, the details of arrangement may be discussed as they come under notice, and the gold bench, or place where the precious metals are used in the construction of dentures, crowns, bridges, and other mechanical resources of the dentist, first claims attention. It is made of beech one inch thick, and measures from the back of the bench to the curve in the place where the pin is inserted 12 inches deep. The bench-pin is inserted, in the middle of a curve in the bench, made by sawing a circular sweep out of the timber, 19 inches wide, opposite which the workman sits on a fixed seat. An arm or shoulder-piece is placed on each side of the curve sawn in the bench so as to make the bench extend in convenient positions on which to lay the elbow, or against which to lean the shoulder in some kinds of work in order to get great steadiness of hand. The curved piece of wood cut out of the bench in most cases is of the exact size needed to extend the superficies of the work-bench in the desired direction, which now becomes 22½ inches measured from the back to the widest part of the arm pieces. The plate of iron shewn in the drawing, forms the upper part of the mortice in which the end of bench-pin is inserted, measures 3 inches by 4 inches, and is first let in to the bench for its own thickness, and then screwed to the bench by four screws, one in each corner. The bench-pin is 2 inches wide by ¾-inch thick and 6 inches long, when it is newly placed in the bench, and slightly tapers towards the free end, which is used as a support for filing wire and other small bits of metal. The bench-pin can be, as indeed it ought to be, firmly secured by a little wedge of hard wood on one side of the pin, which is tapped tight from time to time. On the left-hand side of the bench-pin a few indentations or shallow sockets are made, in which to place the end of a drill when using it with a drill-bow. One inch beneath the under surface of the gold bench a shelf can be placed, cut to the same curve as the bench and parallel to its edge, of ¼ inch stuff and 6 inches deep, on which can be laid the gold files with their handles towards the work-room, a sharp-nosed pliers, and a small pair of shears for cutting gold

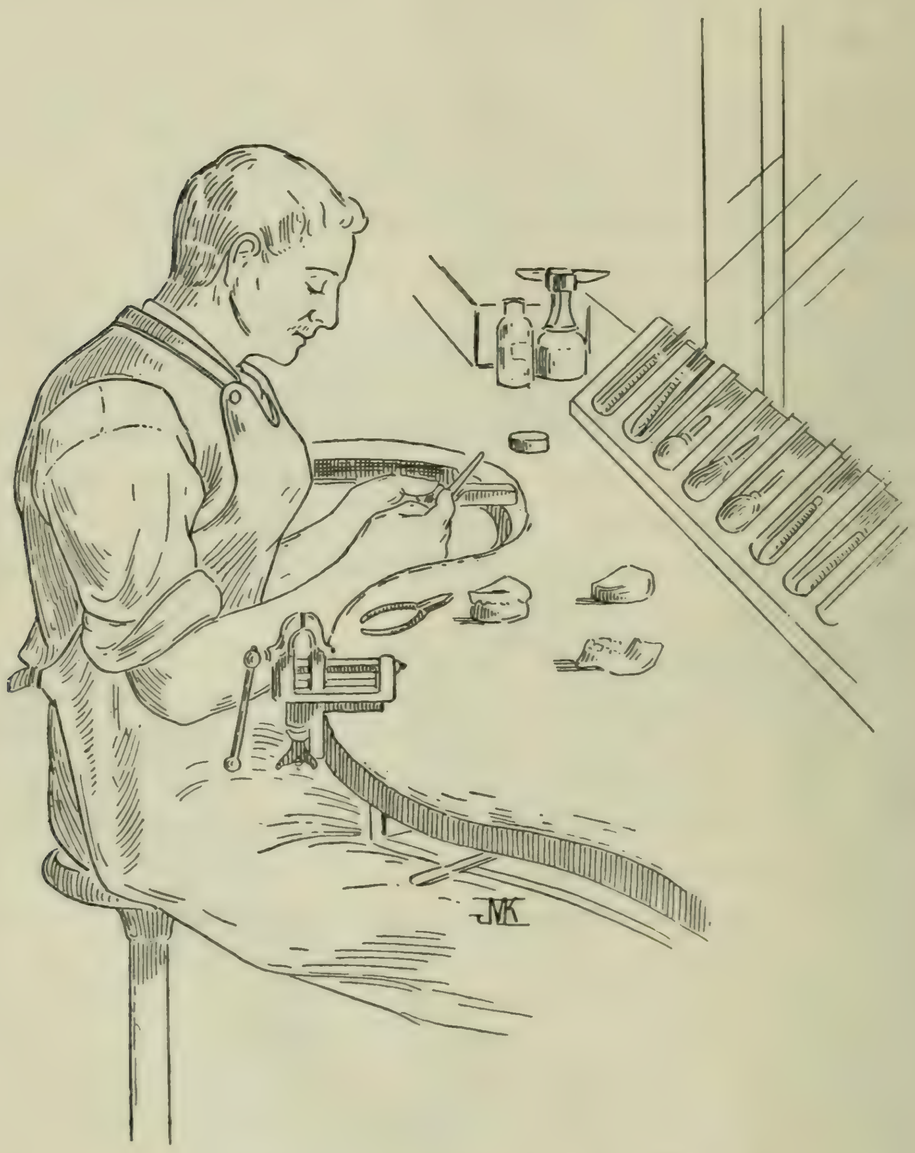


solder or gold plate ; the shears and pliers are always placed with their noses pointing out. At the back of this shelf can be tacked a sheepskin, to form a pocket or open bag, which serves to intercept filings from falling on the knees of the workman, and to support the gold tray which is used to catch all clippings and filings of precious metal. The gold or lemel trays to place in this skin are semicircular in form 20 inches long by 13 inches wide and about 1 inch deep. In the centre of the tray is a circle of perforated holes. This circle is 4 inches in diameter, and below it is fixed a shallow circular box, with a moveable cover or bottom, into which the filings find their way through the holes, and from which box the filings are removed from time to time, so as to avoid loss in case the gold tray should be accidentaly overturned on the floor.

At the right hand side of the workman a small vice is attached to the bench, of any of the approved patterns, parallel or spring locking, this vice is used for holding objects too large to be correctly shaped by the file on the bench-pin ; to hold punches on which to rivet small articles, and to enable the workman with a little judicious care to pull springs or other telescoped appliances apart without any damage, by placing small pieces of lead or leather between the jaws to protect the surface of polished or squarely-shaped objects.

Along the back of this work bench is a tool rack four feet long, set at an angle of 45 degrees, containing twenty-four compartments each compartment being 1½-inch wide, divided by strips of wood ⅜-inch thick and ½-inch deep. In these recesses are laid the drills, corn tongs, sculptors, small hand-vices, broaches, three-square scraper, and other small straight tools. The common method of setting out sculptors is to drop the steel shaft of the tools through holes bored in a strip of wood with the handles exposed above the wood, the cutting edges of the tools being out of sight, the handles in full view. As sculptor handles are of a globular form they are easily mistaken for one another, even when the handle is marked with a workman's mnemonic. The general result is to acquire a habit of pulling up a number of handles till the tool sought for is reached. In the rack just described not only is the handle in full view, but also the cutting edge of the tool. This tool rack is made by boring a number of holes 1½-inch wide in a strip of wood of suitable thickness, length, and width ; a pencil line is struck down the middle of the wood and a number of points correctly spaced on this line. A number of holes

1½-inch wide are bored through the wood, and the wood is then sawn through the diameter of the holes along the pencil line, leaving two pieces of wood with a number of semicircles cut out of them. One of these strips of wood is laid upon and nailed to the lower edge of the piece of wood 6 inches wide forming the rack, and to each projection a strip of wood is nailed across the surface of the rack to form divisions between the spaces. The rack is set at an angle of 45 deg.

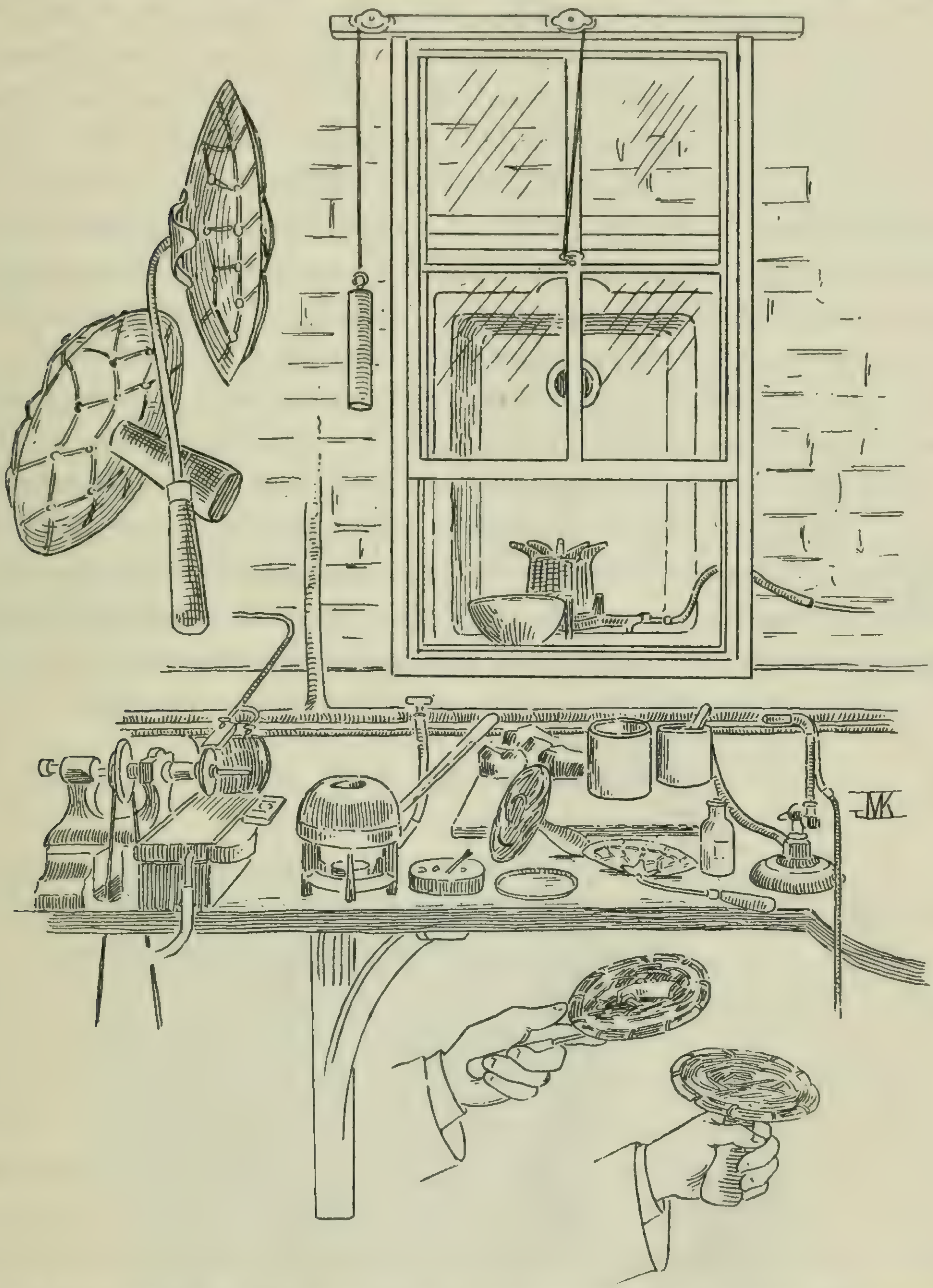


by the aid of thick triangular pieces of wood cut to the angle selected. This tool rack need not be the length mentioned, as in the one described the tools for two workmen are placed in duplicate in its divisions, the gold benches being grouped together, as shewn on the plan. Five inches in vertical height above this tool rack is another piece of shelving 6 inches wide, $\frac{3}{4}$-inch thick, set at an angle of 45 degrees across the window, on which are placed the pliers, saws, dividers, plate nippers, sliding tongs, cutting pliers, square-nosed, pointed, round, half-round, and other pairs of pliers. The angle of 45 degrees is chosen, as the rack casts only a very slight shadow on the bench when set at this angle, and it enables the eye to take in at a glance the position of any tool. This method of arranging tools has the advantage that each tool has a definite place, and is held in place by a couple of small bits of wood about $\frac{1}{2}$-inch square, 2 inches long, nailed or screwed to the sloping shelf in suitable positions, so that any tool can be removed or returned to the rack, without disturbing the others. On the right-hand side of the first gold bench is fitted an old dental engine which has been rescued from neglect. The flexible shaft of the engine is often invaluable to the workman in helping him to bring the cutting edges of the burs into suitable positions for quickly trimming away irregularities or roughness on vulcanite or gold plates. Burs that have become too blunt for use in the operating room are often invaluable in the workroom for cutting metal. Each work-place is provided with a permanently fixed seat set opposite to it, of a round or stool-like shape, turned in a lathe so as to have a comfortable anatomical relation with the *coccyx et tubera ischii* of the workman. The seats of these stools revolve in a horizontal plane and make but slight ravages of wear on the garment that protects the seat of honour. The ease and rapidity with which these seats can be filled or emptied is a great comfort indeed to the busy worker, the stout iron supports giving great rigidity and strength from their sockets in the floor. The seat opposite the wax-bench is higher than the gold-bench seat, so as to enable the workman to sit close to the bench, and fill or vacate the seat in an instant, while grinding teeth to be set up in wax, for the trial case of a vulcanite denture.

The iron brackets supporting the benches must not be forgotten; they are heavy castings of 21 inches square, with a curved rib connected each end of the arms of the square, this part being $\frac{1}{4}$-inch thick by $2\frac{1}{2}$-inches wide. The brackets are bolted into blocks or plugs of wood cemented into the wall in well chosen positions to support the lathes and other tools, with a strain to provide for. The soldering bench is placed in front of the stink closet and is 18 inches deep. A Fletcher blow-pipe, with mouth or bellows attachment, can be placed in a convenient position ; and at the right and left hand are gas taps, one supplying the soldering lamp the other the powerful burner for heating up invested gold cases for soldering. A crock containing moist sand, another holding clean water, borax, slate and bottle, some pieces of willow charcoal, and an iron soldering boss complete the equipment for soldering. The soldering boss is made of a circular piece of sheet iron 5 inches in diameter, slightly dished. On the hollow surface are tied down a number of bundles of soft iron wire. This iron tray swivels on an iron handle attached to the tray by a triangular piece of copper or other metal, to enable it to revolve as on a pivot, and this iron handle is set into a wooden hand piece to protect the hand from heat. This arrangement has the advantage that gold-work with fastenings that have been carefully hand-fitted and waxed into position, with sticking wax on the plaster model, can be placed on the wire surface of the boss and attached to it with some plaster of Paris and pumice. When the investment plaster has set, the wax attaching the fastenings to the plate can be warmed from the plate, the plaster holding the parts in correct position, so that the solder will attach them together when properly heated. The thumb and fore finger of the left hand can quickly move the boss round, and bring every part of the object to be soldered into the play of the flame, without twisting the wrist, or putting the hand holding the soldering boss into an awkward position. Another form of iron soldering boss is designed with a straight handle, which is useful to rest on the bench while held in the hand, and can be quickly revolved on the spindle with the fingers, like the one first described. The wire bosses have one great recommendation, that the flame can be projected through the strands of wire while soldering, without the deflection so often seen when soldering on a coke "lump," the deflected flame becoming hotter than the flame blown on the work, thus melting or sweating the work even when held in the hand of one skilled in the use of the coke lump.

The stink closet has been made, by cutting a hole in the wall, and cementing a household sink of glazed earthenware, 20 inches long by 15 inches wide, with the orifice intended to be connected with the waste-pipe uppermost, the bottom of the sink being flush with the external surface of the wall. On the inside of the wall, a small sash, 18 inches wide by 26 inches high, slides up and down, which can be raised 10 inches. The sash is balanced by a lead weight, attached to a copper rope led over two pullies, so as to stay at any position, in its range of ten inches, that may be wished without slipping down.

Through the side of the sash, enters a gas pipe supplying a low combustion burner under a sand bath, suitable vessels stand in the bottom for holding acids or pickle. The current of air that flows along the outside wall extracts, or sucks away, the noxious fumes of the acids as they are formed, and it has not been found necessary to add a flue to the outlet to increase the draught. This plan of placing the pickle within reach of the soldering lamp, with appliances for heating or boiling the pickle for some considerable time, effects a great saving of time to an expert workman, and avoids the mess and annoyance inseparable from acids kept exposed in the open air of the



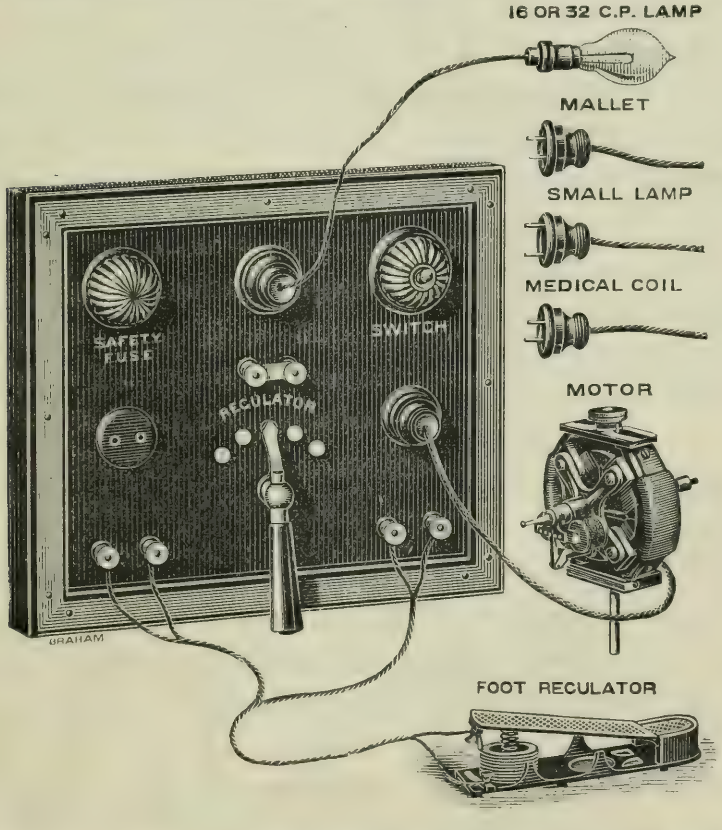
workroom or in the chimney of the fireplace, as the vapours cause much additional dirt to a tidy workman, by making all the iron and steel tools subject to rust. For some three years past leather aprons have been invariably used as more completely protecting the workman's clothes against the detritus and dust that filters through such fabrics as linen and cotton. The collar and belt are made from suitable leather straps, and the former hooks or buttons on the upper part of the apron while the belt is buckled. As a matter of appearance the white linen apron is more inviting, but the leather apron does not soil so much as might be expected, and from constant use, becomes as flexible as a woven fabric, while, at the same time, dust cannot penetrate its substantial substance. Suitable skins can be had, from which gaiters are made for farmers and game-keepers of an ochrous colour ; the skins prepared for making dogskin driving gloves, although not quite so large as those first mentioned, make a very ample and convenient protection for a careful dentist, with the advantages of a handsome colour, and a beautifully dressed surface. When the aprons have done their duty, they can be burnt and the ashes placed in the sweep, to be recouped to the practitioner, in the form of a cheque from the gold smelter and bullion merchant.

"CURRENT FROM THE MAIN."

By C. J. Boyd Wallis, L.D.S.

As electricity is now coming into more general use, some convenient method of adapting the dynamic current to our several purposes is very desirable ; with this in view, I have designed a switch board, with suitable resistances and shunts conveniently arranged, which admirably answers the purposes for which it is intended. It consists essentially of a series of carbon resistances arranged in sets ; each carbon rod is placed in a glass tube, and has a resistance of about 25 ohms. ; the rods are capped with brass screw pieces, by which they are coupled up for the various purposes indicated on the face-plate, namely, a 32 c.p. lamp, a 2½ c.p. throat or mouth lamp, a motor, mallet, cautery, and medical or induction coils. The 32 c.p. lamp acts a double purpose, namely, as a resistance in series with the throat lamp, and as a powerful illuminating medium for special purposes. A feature in the board is a set of carbons, each of about 14 ohms. resistance, arranged at shunts to the resistance carbons ; these are placed at the base of the board with a switch to bring them into play. With this double arrangement of resistances and shunts the current can be regulated to any required force. The board consists of a mahogany frame having a polished slate front, upon which are arranged the switches, sockets, safety fuses, and terminals. The glass tubes containing the carbons are placed between thick sheets of asbestos board, and a clear ventilation runs through the board. The motor answers admirably for dental and surgical purposes, such as the working of circular saws, trephines, drills, &c. It can be worked or regulated by increasing or decreasing the pressure of the foot on a treadle, or independently of the treadle by shifting the motor plug into the socket below, and bringing the shunts into play, by means of which the motor can be worked at any speed, from a gentle revolution of the armature up to a speed of about 5,000 revolutions per minute. In my own house I have had a special wire laid on to lead the current to the board independently of the leads for the house illuminations; this, I think a good plan, for the extra cost is trifling (in my case £2), and a good current is thus obtained, while the risk of interrupting the illuminating current by short circuiting or otherwise is avoided.

I have had a board on a smaller scale, but similar to the one here described—in use with a powerful battery for years, and my new board I have had in use some few months with perfect satisfaction.



The board here described was made for experimental as well as practical purposes, and consequently is rather more complicated than is necessary for dental uses, therefore Messrs. Miller & Woods,* electricians of Gray's Inn Road, to whom I am indebted for the very satisfactory way they have carried out my suggestions, have now modified the original designs, produced a board less complicated, and consequently more suited to dental purposes. The accompanying illustration gives a very good idea of the general outlines of the new board.

A milli-ampère meter can be introduced into circuit by which the current or " dose " of electricity to be administered or used, can be estimated with sufficient accuracy.

THE APPLICATION OF GOLD CROWNS.†

By R. Herschell.

Mr. President and Gentlemen,—From time to time great strides are being made in our profession, the study of which enable us to utilise and save various portions of our dental organs, which were formerly sacrificed. In no department of our work, I think, has this been more pronounced than in the restoration of function and appearance, which crown work has made it possible for us to bring to our patients.

Of course I shall say nothing to-night about the processes by which a tooth is rendered antiseptic and prepared for the various manipulations which we are about to consider this evening, as I start with the assumption that the root upon which we are about to operate is a healthy one, or has been rendered so, by one of the methods that modern science has placed at our disposal.

I.—SELECTION OF SUITABLE CASES.

The first thing in connection with this subject that we have to decide, in the interests of our patients, is when to put gold crowns and when to make use of some other method of supplying the defect. Now it is nearly impossible to enumerate all the conditions for which gold crowns are suitable, as there are so many of them. For practical purposes it is much better to firmly fix in one's mind all the cases for which they are *not* suitable.

The following are the cases where, according to Dr. Evans, gold crowns are inadmissable: 1. Roots permeated and softened by decay; 2. Roots exposed or loosened by absorption of gums and alveoli, or affected with irremediable disease of the investing membranes; 3. Cases where abscess or necrosis has extensively impaired the walls of the alveoli.

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* The Dental Manufacturing Company, Limited, have made arrangements to supply these Boards to the Dental Profession.

† A Paper read before the Students' Society, Dental Hospital of London.

I should like to add to these, cases where the patient will have to wear a plate, but where there are some healthy roots that it is advisable not to extract. I do not mean that crowns should never be put where a plate is to be worn, as I believe that frequently, if one or two roots were crowned, very valuable support for the plate would be gained.

2.—CLASSIFICATION.

Anyone who reads the literature on the subject will, I am sure, be struck by the apparently great variety of crowns; but upon closer examination one will see that we may divide them all into two classes, namely, gold crowns without collars, and those with collars, and each of these may be again divided up into smaller groups.

1.—GOLD CROWNS WITHOUT COLLARS.

What I mean by this is, crowns which are attached to the root by means of a bar of metal or wood, and are commonly called pivots. There are various methods of attaching pivots, but I only propose to consider the construction of those with gold backs. I need hardly remind you that these are extremely useful for putting on to any of the six front teeth.

2.—GOLD CROWNS WITH COLLARS.

All the varieties enumerated in our text books and journals resolve themselves into two classes: (*a*) those with porcelain fronts or bodies; (*b*) those made entirely of gold.

It is these two main classes with their varieties that I have indicated we shall consider to-night. We will therefore pass at once and without any further prelude to the consideration of—

Class 1.—PIVOT TEETH.—The rationale of applying a pivot tooth can be resolved into several successive stages or manipulations, which should be considered separately, as, unless each step is properly accomplished before the next one is commenced, our work will be imperfect.

The stages in applying a pivot may be divided as follows:—(*a*) Preparation of root, including; 1. Shaping surface of root; (2) Preparing and reaming out root canal; (*b*) adjusting the pin;

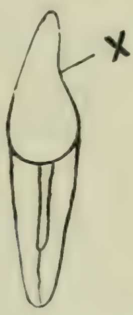
(*c*) adjusting the foil over the pin and soldering; (*d*) fitting porcelain front; (*e*) investing and soldering.

Now, in actual practice these operations have to be carried on under one of two different conditions, according as we choose to fit to the mouth or to a model. Up to a certain point these processes are identical, but differ later on. As we proceed with our description of them, we shall indicate the differences in manipulation necessitated by either of the circumstances.

(*a*) *Preparation of Root.*—In all pivots and crowns the objects of the operator must be to obtain the minimum amount of strain on the portion of the tooth below the gum, and the maximum amount on that surrounded by gum and alveoli.

The accompanying diagrams will, I trust, illustrate what I mean:

A



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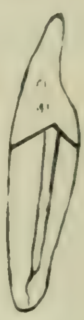


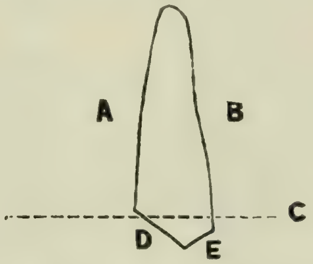
In (*a*) you will observe that the pin is ever so much shorter than the crown, and consequently would bear very little strain supposing a tooth, in the act of masticating, came in contact with the crown, say at point (x). In the case of (*b*), it is obvious that the pin will withstand a very considerable strain, it being so much longer than the crown.

To this end it is apparent that the root must be utilised to its greatest extent, and as long a pin as possible must be inserted into it. In nearly every case, a portion of the tooth above the gum can be brought into use, and should undoubtedly be utilised, as we can then add to the length of pin.

1.—It has been found best to cut the root in a roofed-shaped manner, the two flat surfaces being towards the lips and palate respectively. The labial portion should be cut a trifle under the gum line, so when the porcelain front is fitted to the root it will appear to be growing out of the gum. It is advisable also to leave the palatal portion a little above the gum, for the reason hereafter explained. The labial slope should be longer than the palatine, for the following reasons:—

The angle it makes with the labial side of the root being less obtuse, less tooth substance will be cut away during fitting, rendering the tooth stronger. There will also be less likelihood of the root shewing at the sides when the pivot is fixed. It will be apparent to all that this method of roof shaping is better than cutting the root down flat, for the pivot when fixed cannot rotate, and cannot so easily be pushed forward, as the resistance will be greater.

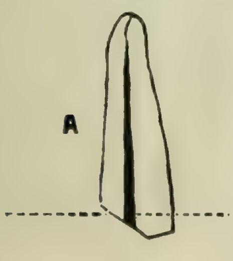
The accompaning diagram will, I think, shew what I mean, better than any explanation I can give.

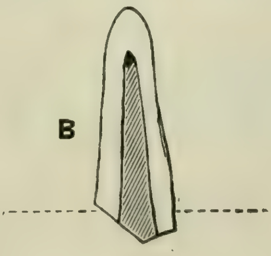


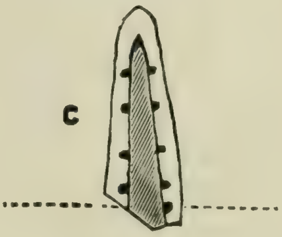
(*a*) Labial side of root; (*b*) palatal side of root; (*c*) gum line; (*d*) labial slope; (*e*) palatal slope.

It sometime happens that a portion of the root is hollowed out or broken down by decay to a short distance under the gum, on either the mesial or distal aspect. This portion can be built up with amalgam, restoring the desired shape. If, however, this is found impracticable, a collar must be placed round the root, in which case the process will be the same as described under the heading of crowns with porcelain fronts. The best instrument for this work is a small corundum wheel having about the same diameter as the surface of the root. The flat side of the wheel should be used, and by this means a flat surface can be obtained on the root, and the gum will not be injured.

2.—In reaming out the canal, we must bear in mind its relation to the labial side. If it should, as frequently happens, be so close to the labial side as to interfere with the fitting of the tooth when the pin is in position, its direction must be altered.







In diagram (*a*) I have endeavoured to shew the anatomical shape of root and position of canal therein. The canal must now be enlarged and carried back towards the palatal portion as in fig. (*b*). The most convenient instrument for this is the one I have here, for various reasons. It is a trifle larger than a tube, which allows for the packing of the amalgam round the tube. It is also slightly cone-shaped, thereby following the outline of the sides of the root. When the canal has been enlarged to the satisfaction of the operator he will nearly always be able to gain a little more room for length of pin by shaping the portion of root near the apex, somewhat like figure (*c*).

The question now arises (1) as to whether we shall fix the pin into a tube secured in the root, or (2) into amalgam only.

(1). If we elect to fix into a tube, we must first make several undercuts in the dentine. Some amalgam is then mixed soft, and smeared over the palatal surface of the canal, and well rubbed into the undercuts. A piece of tube is then placed in the root and pressed firmly into the amalgam that has already been placed there. A portion of platinum pin wire, a little longer than the root canal, having the end which will be near the apex of the tooth filed nearly to a point, is inserted in the tube and pushed up as far as it can go. This can be held in position while amalgam is tightly packed all round the tube. The pin should not be so long that it will interfere at all with the bite. When the amalgam is set the pin can be removed.

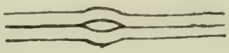
(2). If we intend to fix the pin into amalgam without a tube, the canal is shaped in the same manner. A smooth pin a little longer than the root canal is held in the canal in the position required and amalgam is packed round it. When the amalgam is set the pin can be easily removed.

The rest of the fittings can now either be done in the mouth or to a model.

(*b*) FITTING THE PIN.—If the former, a piece of platinum or platinised gold pin wire tapered off towards the end is now fitted into the canal, tube or amalgam. By introducing the pin as far up the canal as possible, greater strength can be obtained, and the root rendered less liable to longitudinal fracture from pressure. The pin should then be bent back slightly at the point where it emerges from the canal.

There are a variety of pins used, and I think it will perhaps be well for me to mention a few of those mostly in use.

The Bonwill pin; the How pin; the Logan; the split pin. This latter pin the operator will have to make for himself. It is a very useful one for fixing pivots, and easily made by drawing down two pieces of gold wire together through the same hole in the draw plate. To make it so that it will hold into the root canal, if a small round instrument be placed between the wires and the latter are pinched together, each side of it, the appearance will be somewhat as follows:—



You can easily see that if this pin is pressed into the canal it will hold very firmly.

(*c*) Adjusting the Foil.—A piece of platinum foil a trifle larger than the end of the root, about No. 1 Ash's gauge, with a hole punched in the centre, is then slipped on to the post, which it must fit tightly. When the post is adjusted firmly in the root, the platinum is pressed on to the root and burnished well over its surface. The post can now be withdrawn with the foil firmly fixed to it. A piece of gold solder, say No. 1, is placed in the joint, and melted in a lamp or with a blow-pipe. It is most necessary to fix the foil and pin together very securely, as the point where they join is the weakest when the pivot is complete, and, moreover, is the place where breakage takes place in the majority of cases. When soldered, the post and cap are again adjusted in the root, and the foil well burnished down to it, and over the palatal edge, which you will remember has been left above the gum line. This forms an extra check against outward movement, fulfilling to some extent the function of a collar and taking off the breaking strain from the pin at its weakest part, that is where it joins the platinum cap.

(*d*) Fitting Front.—A tooth is then backed in the ordinary way and fitted to the root. The pin will now probably be found to project too far, and to be in the way of the bite. It should therefore be cut off, leaving just enough standing out from the foil to allow of its being removed with pliers. The tooth is now fixed firmly to the foil and pinned with wax.

(*e*) Investing and Soldering.—The whole is then removed and invested in sand and plaster, and soldered in the ordinary way with solder of a slightly lower melting point than the one previously used. The operator should be careful to fill up the crevices between the porcelain and the foil, and the back should be contoured to represent a natural tooth. Care should also be taken to run the solder well over the lip of foil which was burnished over the palatal portion of root. It is a good plan to lay a piece of plate over the lip and solder it on to the foil, as it is sometimes difficult to get the solder to run evenly over its surface.

If it be preferred to take a model and fit to it, it is, I believe, best to insert into the canal a pin with a large head, or the projecting end may be flattened and split. The pin will then be brought out in the impression in its proper position. The model being cast, the pin should be carefully taken out of the plaster and the permanent pin fitted.

The remainder of the operation is precisely similar to fitting in the mouth.

The gold back having been filed into the proper shape and polished, the pin should be roughened with a file or sculptor, and the pivot is ready for insertion in the mouth. It can either be fixed with osteo, silk and mastic, gutta percha or amalgam. In the last case the pin must be of platinum.

Gold Collar Crowns.—Dr. Evans says:—" This style of gold crowns includes those methods which consist of banding, capping, and hermetically inclosing with gold the end or neck of a root, with or without any portion of a natural crown, for the purpose of securing stability to the artificial crown, preventing fracture of the root and decay of the part, thus permanently preserving them. This method possesses much practical value as a preserver of tooth structure and restorer of usefulness to the teeth, and affords excellent supports for bridge work."

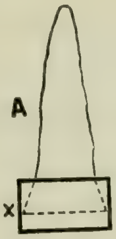
Before describing the construction of the collar, I will endeavour to give an idea of the method of preparation of the root to receive it.

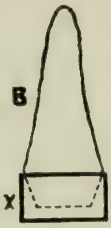
There are two main classes of gold collar crowns :—1, those with porcelain front or body : 2, those completely of gold.

I will begin with the former and follow the different stages of their application. These are :—(*a*) Shaping the root. (*b*) Fitting collar and soldering. (*c*) Fitting cap and pin. (*d*) Fitting porcelain front. (*e*) Investing and soldering.

(*a*) *Shaping the root.*—The occluding surface should first be cut down, the labial portion to a short distance below the gum margin, while the lingual may be left standing to about midway between the gum and the cusps. A natural root is cone-shaped towards its apex. It is therefore apparent that if we fit a collar to the root at the gum line, on being pressed up, the rim of the collar will get further and further away from the root.

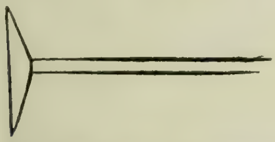
It is obvious, therefore, that if we intend to have a well-fitting crown, we must alter the state of things, and reverse our cone, that is to say, shape the root so that the cone will have its apex in the opposite direction.

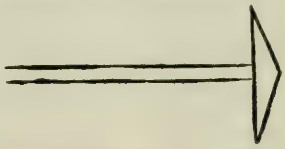




A represents an untouched natural root with a collar fitted to the edge. It shows how, if the collar be pressed up, its edge will be away from the root.

B is a root that has been shaped as desired. The collar has been fitted and pressed up, and fits the root tightly. The most useful instruments for commencing this are two corundum wheels, convex one side and flat the other, something after this manner.





With these the enamel can be cut away and the root ground roughly square. You cannot, however, reach every spot, and consequently corners will be left. If corners are left, it becomes very difficult to fit the collar and adjust it accurately. A very good way of clearing away what remains, is to chip it off with an enamel chisel, taking care not to let the chisel slip and damage the bone. This done, there will still be a roughness, which can be made smooth by the aid of a strong How scaler. It should be inserted under the gum, and made to cut during withdrawal. These finishing touches may also be done with the engine armed with a small fissure bur.

(*b*) *Fitting the Collar.*—To find the approximate circumference of the root, a piece of silk or wire may be placed round. This being done the length of the silk or wire should be marked off on a piece of 22-carat gold plate of say No. 3 thickness, Ash's gauge. The operator must then take note of the width required. This is easily done by requesting the patient to close the mouth, and measuring the distance between the occluding tooth and the gum. About $\frac{1}{16}$th inch should then be allowed for the portion which will be below the gum. The marked-off piece of plate being then cut off and annealed, should be placed round the root. From the portion of the collar corresponding to the mesial and distal sides of the tooth, it will now usually be necessary to cut a semi-circular piece, the edges of which must be filed smooth. This is to allow for the alveolar process, which is higher between the teeth than on the labial and lingual aspects. The collar can now be placed round the root and pressed up under the gum as far as it is considered necessary, and if it has been cut full long, it will overlap at some point. In my opinion the best place to arrange for the overlap, is where it can be most easily got at, and generally this will be towards the buccal side. The collar should now be carefully burnished round the root and held tightly in position, and with a sharp-pointed instrument, working inside the collar, the place should be marked on the outer where the inner flap comes. The collar can now be soldered in either of two ways. 1, by allowing the ends to overlap ; or, 2, by bringing the two ends together and making a flush joint. By allowing the ends to overlap, a good deal of strength is gained. However, it makes the collar much thicker at one spot, thereby destroying the uniform thickness. It also makes it very difficult to contour the gold at that place.

Now if we join the collar with the two flaps edge to edge, we get uniform thickness, moreover the solder having run along the joint the whole piece becomes continuous, and I maintain just as strong at the joint as at any other point. I consider the latter the better method. There is one thing about the overlapping joint that I should mention. Supposing amalgam is to be used for fixing the crown to the root, by having the gold overlapping, the solder is less likely to be affected by the mercury. However I don't think you will often use amalgam for fixing, and if you do, I should propose that the crown be constructed of gold lined with platinum or platinum foil.

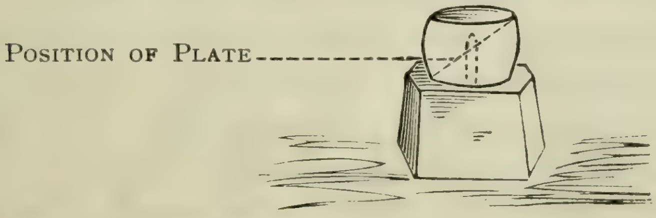
1. To proceed with the soldering operation in the case of overlapping joint. Remove the collar and clean well in acid and wash. The ends must then be boraxed and brought together, so that the inner one just reaches the mark we have made on the inside of the outer flap, and fixed there. A small piece of No. OO gold solder should then be laid along the joint and melted in the blow pipe. All excess can then be filed away.

2. Should we decide to bring the edges together and make a flush joint, we must cut off the outer flap at the mark. Now place the collar on again and make sure that the edges come properly together. If the collar is still too large, a few strokes with the file will quickly reduce it to its proper size. All being in order, the gold must be cleansed in acid and washed, and the edges boraxed. They can now be brought exactly flush by bending one flap over and then under the other or vice versa. A piece of No. OO gold solder is placed along the joint as in the other case and melted in a lamp or with the blow pipe. The excess of solder is carefully filed off and the collar pushed on to the root and burnished well round it.

At this stage it is as well to contour it, with a pair of forceps for that purpose, and if there are teeth on either side of it, it should be knuckled up close to prevent packing of food between the teeth, and thus as nearly as possible imitating nature's contact.

(*c*) *Fitting cap and pin.*—To begin with we presume that the canal or canals have been prepared, and cut ready to receive one or more pins, and at this juncture, we must decide whether we are going to make our crown with merely a porcelain face, or whether we are going to have a porcelain body to it, as in the one case the cap will be fitted rather differently to the other.

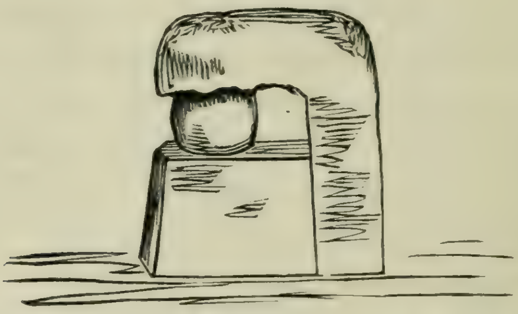
Taking first the case of the porcelain front.—The pin or pins should be fixed in their places, and a model taken by pushing a small portion of gutta-percha or soft stent into the collar and round the pins. When the stent is cool the collar can be removed with the pins in situ and a cast be made in plaster. When the stent is taken out of the collar, we shall have it and the pins in their relative positions and the surface of the root will be accurately shown. The pins being carefully taken out, a piece of twenty-two carat plate is fitted inside the collar, the front portion lying on the impression of the root and the back portion on the rim of the collar. I annex a diagram to show exactly what I mean.



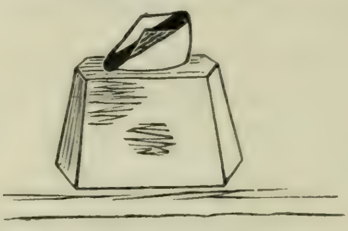
The operator should then adjust the pin or pins, so that a short portion projects through the cap. The whole should then be *soldered on the model.* This ensures absolute accuracy if the model be correct.

It will now be necessary to try the cap in the mouth and get a bite in wax. A small piece of wax is pushed into the cap and an impression of the opposing teeth obtained in it. The wax should then be carefully removed, and a model be taken of the cap as it stands in the mouth. It must of course either come off in the impression or be placed there in position immediately. If the impression be taken in plaster the caps will invariably come off in the impression. A cast is then made in plaster in the usual way. The wax bite should then be placed in position on the cap, and a plaster bite be made of this.

I append a diagram which, I believe, shows the neatest way of making this bite.



The wax being removed, the labial side should now be cut close to the cap and rounded to allow a tooth to be fitted over it. The diagram, I trust, illustrates my meaning.



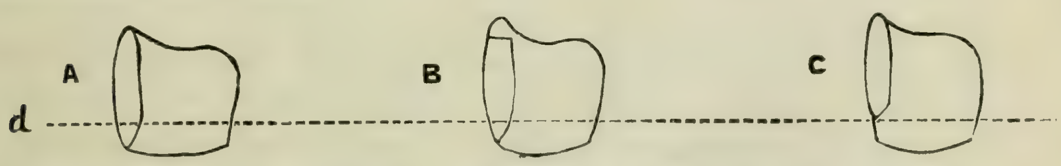
(d) Fitting the porcelain front.—There appear to be two methods of fitting the mineral. The one is to lap it over the front of the collar, and the other to fit it exactly to the edge. I believe each has its special advantages and disadvantages. I will in a few words run through what seem to me to be the merits of each, and leave you to judge which you think probably will answer best in the great majority of cases. When the tooth is fitted over the outside of the collar and the crown is inserted in the mouth, it becomes covered by the gum ; out of which it appears to be growing and

consequently looks natural enough. I venture to think this is something in its favour. But I am informed that the gum recedes and leaves the tooth projecting. If, however, the tooth has been fitted so that say 1/16th of an inch of it is below the gum, it will surely take some considerable time for the gum to recede so much as to show the gold. I am also informed that the tooth is very much weakened by the loss of its substance sustained in the operation of fitting. But I think we must bear in mind that very little, if any, pressure is borne by that portion of the tooth, if it has been properly backed and soldered.

In the other case the tooth comes exactly to the edge of the collar, and does not project so far perhaps. But if for some reason the root has not been cut down below the gum we shall have the gold showing at once. And again supposing the gum should recede, as we know it does as age increases, we shall have the gold collar showing much sooner than in the other case.

(*e*) The tooth is now backed and stuck in position with wax and great care should be taken to keep the porcelain tooth free from the bite of the occluding teeth. If the bite is unvoidably so close to the porcelain that there is any risk of its being broken during mastication, it is well to cut away the tooth on the grinding surface and build over with a piece of gold.

The whole is then invested in sand and plaster and soldered. The cusps can be built up by placing pieces of gold wire, bent into a half-round form, on to the cap, until the required height is reached and allowing the solder to run into the crevices. The crown is now filed to represent a tooth as nearly as possible, making sure that the bite is not high, and care being taken to avoid crevices, or any place where food may lodge.



A. Crown with porcelain front fitted well over the collar and projecting under the gum line.

B. Similar crown having biting surface of tooth ground off and built up with gold.

C. Crown with front fitted to edge of collar only

d. Gum line.

In the other case where the whole of the biting surface is of porcelain, I think the most convenient tooth to use is a tube tooth. Here the root should be cut as flat as possible and the collar should also have its free edge cut flat. The collar can then be laid upside down on a flat piece of plate and the solder allowed to run round the rim.

The excess of gold is cut off and filed flush. The tube tooth can now be fitted very rapidly to this flat surface, and the process is in fact exactly the same as fitting a tube tooth to a plate. The advantage claimed for this kind of crown appears to be the ease with which the tooth can be replaced at any time.

We will now pass on to the all-gold crowns and we can class them as follows :—

1. Crowns constructed in sections.
2. Gold seamless crowns.
3. Gold seamless contour crowns.

1. Those *constructed in sections.* The different manipulations are :—

(*a*) Shaping root.

(*b*) Fitting collar.

(*c*) Making crown.

(*d*) Soldering.

(*a*) The process of shaping the root is precisely the same as already described under "Crowns with Porcelain Fronts."

(*b*) The collar is also fitted in exactly the same way as already described, with the exception that it is contoured all the way round, and the labial portion of it is not cut down as in the other case. The collar must now be placed on the root and burnished well round. The next thing is to fill it with wax and tell the patient to bite. The impression of the opposing tooth will then be found in the wax. The collar having been carefully removed must be invested in plaster, allowing the occluding surface to be quite free. This can now be trimmed up into a pedestal shape, and a hood bite should be made in plaster. When the whole has set, and the bite has been removed, the wax can be carved to represent the cusps of a natural tooth.

No wax must on any account be added. When the bite is again adjusted, provided no wax has been added, it will be found to be absolutely correct. The next step is to procure a cast in zinc. The most convenient way to do this is to get a piece of metal tube about three inches long and a trifle larger than the crown. An impression of the crown is made in modelling sand in the ordinary way. The tube is adjusted vertically over the sand impression and the zinc poured into it. We shall have a zinc die representing the crown of our tooth. The next thing is to get a flat piece of lead about six inches in diameter. On the lead is laid a small piece of annealed 22-carat gold about No. 3 Ash's gauge, a trifle larger than required. The die is now gently hammered into it, and if frequently annealed and carefully done a cap will be struck up in a few minutes, which will be a facsimile of the carved wax crown.

The wax must now be removed from the collar and the gold adjusted. It will be necessary to file off a portion of the rim of the collar corresponding to the thickness of the gold cap, otherwise the bite will be high. This can be easily ascertained by putting together the plaster bite. When our cap is adjusted and perfectly free of the bite, the cusps must be filled with solder. This is easily done by laying the cap upside down on the asbestos soldering block and allowing the solder to flow into the cusps till the required thickness is reached. It is manifest that this is done to secure strength to the masticating surface. No. 1 solder will be best.

(*d*) *Soldering cap and collar*:—A good deal of care must be exercised in soldering the cap to the collar, as it is rather galling to have the crown go wrong after having carried it thus far in safety. There are various devices for doing this. Tweezers and other implements have been invented. I think, however, the simpler method is as follows. Carefully borax the edge of the collar all round. Lay the cap upside down on the asbestos and place the collar on it in position. If the collar is now carefully heated with the blow pipe the solder from the cusps can be dragged round and a very neat joint is the result.

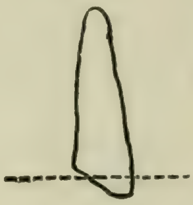
This done, all the excess of plate and solder should be filed off. This is another case in which great caution must be exercised, otherwise the proportion of the collar which encloses the root will be bent by pressure of the fingers. To prevent this I have found it a good dodge to fill the crown with composition which, when it is hard, will resist all the pressure necessary to hold the crown in position during polishing, &c. The composition may be retained until the crown is completed and ready for insertion in the mouth.

In cases where the opposing natural teeth are missing and where a plate is to be worn, the same process is gone through with this exception :—There being no opposing teeth a bite cannot be got by allowing the patient to bite on wax, which method, you will remember, we adopted in the case where opposing teeth were present. In order to save time it would take to carve up, to imitate cusps, and pouring dies, &c., these can be bought, and they are quite natural enough. It is therefore preferable to get some of them. In this case it must be arranged so that the crown when adjusted will be level with the crowns of the teeth on each side of it. The remainder of the operation is then the same as already described.

GOLD SEAMLESS CAP CROWNS.

1. For incisors, cuspids and bicuspids.
2. For bicuspids and molars.

1. FOR INCISORS, CUSPIDS AND BICUSPIDS.—The roots should be cut to within about $\frac{1}{8}$th inch of the gum and shaped as described in Gold Collars Crowns. From the palatal side of the pulp chamber, the root should be bevelled off to a shade below the gum level, at the labial portion.



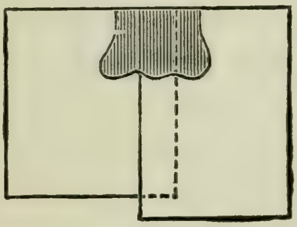
A model of the root must be made, and a die cast. Into a piece of pure lead with a flat surface, the die is punched. The impression in the lead should now be enlarged by covering the die with a piece of thin kid, or some other convenient material and hammering it again into the lead. The reason for this is apparent, for if you try to swage a piece of gold, the die fitting the lead exactly, you will almost certainly split your crown. A piece of gold is then laid over the hole and punched into it, care being taken of course to anneal frequently. The result should be a seamless cap fitting the root to a nicety. When placed on to the root, burnish the sides and top into every unevenness that may occur. This process will have the effect of marking the gold with an indentation where the position of the pin should be, as it will show the impression of the root canal. The pin should now be soldered into the cap and the porcelain face fitted and soldered in the manner previously described.

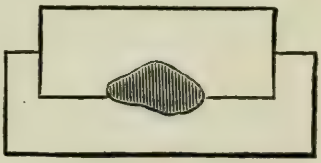
2. FOR BICUSPIDS AND MOLARS.—We will take first a case in which the shape of the tooth can be restored with gutta percha or other suitable plastic material. In building up the tooth, the operator

must of course see that his crown portion is free of the bite, and the crown must be larger than the neck. When this has been done, it is necessary to take an impression and make a die. The striking up process will be just as already described. The tooth will, of course, not be contoured. In a case where the tooth is so broken down as to render building up impossible in the mouth, the root must be shaped for receiving a collar. The form of the cervical portion is best ascertained by surrounding it with a strand of binding wire, the ends of which must be twisted up until the wire is tight. Then burnish it round the root. An impression is taken and the wire placed in position therein. The plaster model when poured will shew the wire in position, slightly imbedded in the plaster, which should be trimmed to the inner surface of the wire, as this will represent the exact size and shape of the root. Wax can now be built up on the plaster to represent the crown, and the die made and the gold struck up as before.

Gold Seamless Contour Crowns.

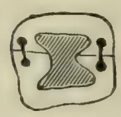
There appear to be various ways of making these, but I will not weary you further than by describing what seems to me to be the most practicable. We will take the case of a superior molar, for that would be the most difficult. Take a natural tooth, for preference, as a model.





From this a sectional model is made in any material the operator finds best. A cap of gold, which will just fit the orifice of the mould is placed therein. The mould can now be placed in a vice and the cap expanded to its general outline by hammering into it a plug of cotton wool. By Dr. Herbert's method, the actual contour of the mould can be obtained in the gold cap, which must be frequently annealed. I cannot enforce this too much, as I can assure you that the gold will crack if not often annealed, however carefully the work may be done.

Caps of metal in all sizes can be bought and kept in hand. In cases where a root has been fractured, and the operator considers he can make a satisfactory crowning operation, the fracture must be thoroughly cleansed. Perhaps a weak solution of carbolic acid is best.



When properly clean, the parts should be pressed tightly together, and fastened securely with two or three strands of waxed floss silk, dovetails should now be cut and filled with a hard amalgam. A tight-fitting collar can now be made, and a pin fixed in the root with a hard setting plastic material. The crown must then be made in the ordinary way.

I will mention in passing, the partial gold crown. I will not, however, say anything about it, for not a great while ago, as you will remember, Mr. Gardiner read a most excellent paper on this subject, and as any remarks of mine would fall flat, I will merely advise you to re-read his paper.

INSERTION AND CEMENTATION.

In the insertion and cementation, the object is to form a perfectly solid and impervious union between the crown and the tooth. For this end I believe the plastic oxyphosphate of zinc is preferred. It should be mixed to a creamy consistency and should be slow setting. Supposing the pin has been fixed into the root, the crown should be filled with cement, adjusted on the root and pressed home. The patient should be requested to bite, to see that the occlusion is free. If not the crown must be pushed on still further, until the opposing teeth do not touch. This done, the surplus cement which has squeezed out between the gold band and the root must be wiped off with a wet plug of cotton, and the edges well burnished round the root, so that the union of the collar with the tooth cannot be felt. It is important to displace every particle of cement, otherwise when it hardens it will be liable to set up inflammation in the surrounding periosteum.

Some prefer to fix with gutta percha. In this case, the inside of the crown should be wiped with chloroform, and heated with a hot air syringe. A portion of the gutta percha is then inserted and caused to adhere to the sides. The crown is heated, a sufficient quantity of gutta percha attached and the whole inserted, when cold the excess of gutta percha must be cut off with a sharp instrument. Sometimes a small hole is cut in the top of the crown to allow the air and surplus cement to escape. This must of course be filled up with gold when the cement is hard.

In conclusion, Mr. President and gentlemen, I wish to thank you most heartily for the kind consideration you have given me in listening to this paper, which I fear must have been most tedious to you.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The Annual General and Ordinary Monthly Meeting of the the above Society was held on the 11th ult., Mr. Thomas Arnold Rogers (Honorary Treasurer), in the Chair.

The Chairman stated he had with great regret to announce that their President (Mr. Hutchinson) was prevented by illness from taking the Chair. Mr. Stocken, Mr. David Hepburn, and Mr. Harding, Vice-Presidents, had each been appealed to to fill the place, but were prevented by like circumstances, so that he would ask their kind indulgence for himself.

Mr. G. O. Whittaker, and Mr. J. W. Seville having signed the obligation form, and were admitted *in absentia* members of the Society.

Mr. H. E. Goddard, L.D.S., Glasgow, of Nottingham, Mr. W. Draper Moon, L.D.S., Eng., Newcastle-on-Tyne, and Mr. C. W. Croft, L.D.S., Eng., of Handley, were ballotted for and duly elected members of the Society.

The following nominations were made as resident Members: T. H. G. Wrighton, C. J. Blaarberg, L.D.S., Eng., A. R. Colyer, L.D.S., Eng., H. A. Forsyth, L.D.S., Eng., W. S. Holford, L.D.S., Eng., E. Balding, Junr., L.D.S., Eng., Percy L. Webster, L.D.S., Eng., G. Hern, L.D.S., Eng. ; and the following as non-resident Members : H. Ellwood, of Red Hill, R. E. Waller, and M. F. Hopson.

The Librarian (Mr. Ashley Gibbings), being called upon for his report, stated that since the last meeting he had received the "Dental Review," the Philosophical Transactions of the Royal Society of London containing the paper of Mr. Howard Mummery on some points of the structure of dentine.

The Curator (Mr. Storer Bennett) said, that he had little to add to what he had already said with regard to the various specimens which he had fully described at the time of their presentation, but following the course which he adopted last year, and which seemed to give general satisfaction, he had brought down all the specimens which they had received during the past twelve months, and placed them on the table, with labels attached fully indicating what they were ; he would specially draw attention to the skull of the mummy 4,000 years old which showed that the retention of the temporary teeth was not a condition at all peculiar to the present age.

The Treasurer then presented his report.

Mr. H. L. ALBERT narrated a case of asymmetry of the jaw, his patient being present. He stated that the case came to St. George's Hospital about six months ago with a deformity of the jaw, which they could all now see, and was admitted under the care of Mr. W. H. Bennett. Two years prior to her admission to the hospital the patient consulted a dentist, who removed a tooth and adjusted some artificial teeth. A short time after, she noticed that her jaw was growing to one side, and she also felt pain in the left temporary articulation. Not only did the deformity increase, but also the pain on opening the mouth. There was nothing in her childhood which at all helped to explain the case except an illness, low fever ; this low fever lasted about a fortnight, and left her without any muscular power at all for six weeks; she had also had scarlet fever. When she came to Mr. Albert, he took measurements ; she brought her photograph with her taken twelve months before the tooth was extracted, and there were in the photograph, no doubt, the signs of the existence of the deformity. There was a consultation held at the hospital, and before any thoughts of operating, it was thought desirable to see what the dental art could do. Reading the measurements, only parts of the upper and lower jaw seemed to be involved, there was no asymmetry from the root of the nose to the external angular process to the ear ; from the ear just below the zygoma to the angle of the jaw, the left side measured 4 inches and the right 3 ; from the symphysis of the jaw both sides corresponded. From the external angular process tracing back and just in front of the ear there is a considerable prominence about 1½ inches in length, the jaw was drawn to the right side, and the chin was one 1 inch from the median line. When Mr. Albert saw her first, she could only open her mouth about an inch, he put her under ether and removed the teeth, which were in a very bad condition, the mouth being full of viscid mucus. The teeth were very interesting, some were slightly carious, and there was considerable absorption ; he had nothing more to add except that he had tried several sorts of dentures padded in various places but without any success, at last he tried to make a set of teeth only, and no attempt at padding ; he should be very glad of any suggestions, and had much pleasure in presenting the patient's portrait which he had had painted, if it were thought worthy of acceptance.

The CHAIRMAN remarked that the case was interesting, and he hoped that it would lead to some discussion. As Mr. Heath was present, than whom there was no better authority on cases of this kind, they should be glad to hear him on the subject.

Mr. CHRISTOPHER HEATH said the case belonged to a class in which he took a great interest, he had with him a copy of one of his own lectures, given at the Royal College of Surgeons in 1887, wherein was depicted a girl with a deformity very similar in character to the one that had just been brought to their notice ; it was a case of hypertrophy of the neck and condyle of the jaw, and he thought there could be no doubt from the measurements given that this was the disease that Mr. Albert's patient was suffering from. They had been told that there was a considerable difference (1 inch), in the ramus of the jaw, and that the condyle of the jaw was considerably enlarged : that would be due to hypertrophy of the condyle. He thought that relief could only be given by removing the condyle and portion of the jaw ; he felt confident that no dental treatment could put the matter right. Mr. Heath drew attention to a drawing, on the previous page of the lecture, of a remarkable preparation in in the London Hospital taken from a dead body, the jaw was examined, and then that very remarkable condition of the jaw was found to exist, there was hypertrophy of the condyle and a very similar deformity as in his own case ; anyone could examine either of these cases in the Museum of the Royal College of Surgeons.

Mr. STORER BENNETT said, with regard to the teeth, that although interesting as presenting a considerable amount of absorption he did not think that they were responsible for the overgrowth on the left side, for the absorption might be seen on both sides, and he could not help thinking that the deformity had no connection with the condition of the teeth.

Mr. S. A. COXON wished to ask Mr. Albert what advantage he expected to derive from removing the lower incisors ? They seemed to be in fairly good condition, all of them.

Mr. ALBERT in reply said that he should be very glad if the Society would accept both the teeth and portrait ; he hoped that he did not seem to assert any connection between the absorption and the disease. In reply to Mr. Coxon, the removal of the lower incisors was the only way of getting access to the mouth.

Mr. J. F. Colyer read a communication referring to three cases of fracture which illustrated the use of what is known as a Hayward splint.

The first case occurring in a boy, æt. about five, was seen at Westminster Hospital. He had fallen from a height of about twenty feet, and sustained a fracture through both canine regions. In addition, the lower lip was much cut, and when first seen four days after the accident, was extremely swollen, adding to the difficulty of the case. When examined under chloroform the fragment carrying the incisor teeth was displaced downwards and backwards, and could be with great difficulty replaced. The teeth were thin and very short. Impressions were taken, and a loosely-fitting splint made, this was filled in with Gilbert's gutta-percha, and the splint forced into place (chloroform being administered). A fair amount of difficulty was met with in getting the fragment into place, but the case progressed without an untoward symptom, the splint being removed in five weeks. The second occurred in a female, æt. thirty-five, who during a strike meeting acquired a fracture in the left canine region. Attempts were made at first to treat this with an outside gutta-percha splint, but this proved inefficient to keep the fragments in position. When first seen by Mr. Colyer the larger fragment was very much displaced downwards, the bicuspids and incisors in the fragments were very short. In the molar region on either side the molar teeth were level with the gum. A splint was fixed in position and removed in five weeks, good union resulting, though the canine had to be removed, followed by an exfoliation of a small portion of bone at this point. The third case was that of a man who had been treated fruitlessly by an outside splint for fourteen days. Examination proved that the line of fracture ran in front of the right lower wisdom, the alveolus carrying the first and second molar being fractured and forced inwards. The displacement of the fracture carrying the wisdom tooth was well marked, being displaced upwards and inwards towards the median line. A splint was made and fixed, the patient progressing very well during the first three weeks, but during the fourth an abscess formed about the angle of the jaw. The splint was removed at the end of the fourth week when good union had taken place.

In the first case, the thinness, slight looseness of the teeth and displacement of the central fragments, and in the second the shortness of the teeth and great displacement downwards of the larger fragment, contra-indicated a Hammond splint, as the tension on the teeth would have been prejudicial.

In the third case, a slight addition to the splint was made. The tendency of the bandage in these splints is to slip forwards, and it is at times difficult to keep it in correct position. To overcome this, slight catches are soldered on the splints, one towards the front part of the outside bar, and one towards the extremity, this latter being useful for fixing or spiking on the bandage when pressure is required towards the back part of the jaw. In these splints it is as well, if there is the slightest doubt about getting the fragments back into perfect position, or if the teeth are at all pointed, they make them loosely fitting and fill them with some soft form of gutta-percha, this overcoming the difficulties mentioned and ensuring a perfect fit. Another point is to bend the bars upwards so as to prevent the wire rubbing the angles of the mouth, and it is always as well to moisten this part of the wire with some lubricant.

The splint has its advantages and disadvantages. The principal disadvantages urged against it being the discomfort to the patient when lying on the side, and the liability to cause eczema at the angles of the mouth. For these reasons many would prefer a Gunning's splint in the cases recorded. The advantages of a Hayward when it can be used over a Gunning's are, firstly, that it allows movement of the jaw, and hence more solid nourishment can be taken than with a Gunning's, and again, the pressure from the bandage is more evenly distributed than is the case with the Gunning, a most important point.

The CHAIRMAN remarked that fracture of the jaw seemed much more common now than it used to be ; possibly it was due to the greater amount of machinery employed, and the greater number of accidents arising from it.

Mr. W. A. MAGGS, for Mr. A. C. Farnsworth, showed a new impression tray for rapid modelling. The tray had a hollow chamber and an inlet and outlet tube, the idea being to fill the chamber with cold water so that the impression might be cooled quickly.

Mr. WALTER H. COFFIN, without wishing to detract from the merits of the invention, or the ingenuity of the inventor, said that he might be pardoned perhaps for mentioning that this form of tray, though neat and convenient, was by no means new, he remembered perfectly well an equivalent to this being used by his father twenty or thirty years ago.

Mr. Christopher Heath, F.R.C.S., then read a paper on "Epithelioma of the Jaws." He said there were two varieties of epithelioma affecting the jaws, the common form of squamous epithelioma, occurring about the lip, face, and principally at the junction of the skin and mucous membrane, and the columnar form of epithelioma. It was only of late years that surgeons had recognised the second form, *e.g.* columnar epithelioma. The columnar epithelioma development depended on whether the epithelium was originally columnar; where there was squamous epithelium, squamous epithelioma would occur, and where columnar epithelium, columnar epithelioma. In the upper jaw there was the cavity of the antrum where the best examples of columnar epithelioma occurred; in the lower jaw no such cavity existed, and yet it was remarkable that the researches of Mr. Eve had shown that columnar epithelioma affected the lower jaw. Reverting to the squamous epithelioma, he said it was hypertrophy of the epithelium with a tendency for the epithelium to heap up and burrow down in the deeper structures of the part, and on the surface wherever there was a squamous epithelioma there existed the characteristic heaping up on the edges, and the eversion of the edges by which the disease could be recognised. A specimen was shown as an example of the characteristic rough surfaces of epithelioma from hypertrophy of the epithelium, which would have gone on to ulceration, if it had not been operated on.

Mr. Jonathan Hutchinson had shown that it is quite possible to "grow an epithelioma," *i.e.* if sufficient irritation of the parts subject to this disease was kept up, it would undoubtedly produce an epithelioma. One of the best examples was that of epithelioma of the lower lip, following the use of a clay pipe. Another example was the irritation caused by the teeth; surgeons saw more cases of epithelioma of the tongue, due to the irritation of the sharp ragged edges of the teeth than from any other cause, in fact it was at the side of the tongue that epithelioma of the tongue usually developed. A denture which does not fit and is constantly keeping up irritation, and particularly if it is never taken out of the mouth, is liable to cause ulceration and by irritation develop into an epithelioma. Now these cases of epithelioma of the gum are pretty characteristic and well marked, and should be recognised at once by their everted edges and excessive painfulness. The disease also dipped down into the alveolus, a fact which bore on treatment, for surgeons were always anxious to preserve a portion of the body of the jaw, if possible, to prevent after displacement. He had never seen a case in which the chin did not go round ; cases had been mentioned where, by some clever mechanical contrivance, the chin had been brought straight, but in his own experience he had found any such method so extremely painful to the patient as to render it impossible of adoption, the muscles on each side begin to contract, and so force the jaw out of place. The point of practice involved was that if there is a real epithelioma, it is of no use to spare the jaw ; the right thing to do was, he thought, to saw out the piece of the jaw involved ; anything less would rarely prevent recurrence.

In the upper jaw the disease may spread up along the palate and into the antrum, and frequently further than the antrum. A specimen was shown in which the disease was principally on the palate, and spread from that into the antrum. The man, a soldier, was aged forty-six, and he suffered from epithelium for some time ; there were several masses of cancer both on the hard and soft palates, but no involvement of the orbit, the disease was entirely confined to the cavity of the antrum. To contrast with that, a case of columnar epithelioma was shown, which exemplified extremely well that the disease was entirely confined to the upper jaw. It occurred in a gentleman, aged sixty, who first knew that anything was wrong by a discharge from the nose. This gentleman was treated for discharge from the nose, and then treated by his medical man for gumboil. Mr. Heath went carefully into the case and felt sure from the general appearance and the history together, that there was very much more serious mischief behind—and that is often the case with supposed polypi, &c. In this case he removed the upper jaw. He congratulated himself on the fact that the whole exterior of the maxilla was healthy, but on making an horizontal section it would be seen that the whole of the antrum was filled up with a beautiful specimen of columnar epithelioma, which had pushed its way into the nose. There was another specimen from a gentleman with an ulcer of the skin. He was said to have had an operation done for this ulcer, but it seemed to involve the bone. On examining him, there was not only ulcer, but the sub-maxillary gland was enlarged and there was a distinct growth on the lower jaw. Mr. Heath operated upon him. The point he wished to show was that the disease did not merely crop up and involve the periostium of the lower jaw, but that it had gone right into the interior of the lower jaw, and spread between the teeth ; a point which illustrated that there might be epithelioma from above invading the bone, or from below invading the bone, and in either case he did not think one could make too free in removing it. Then again, there might be secondary developments of epithelioma of the lower jaw, following epithelioma of the lip. Now, epithelioma of the lip was one of the least active forms of epithelioma, and it was remarkable that after it was thoroughly cut out it rarely recurred, and when it did so, it did not recur in the position of the original disease.

A case of this was described in which the patient, a soldier, aged thirty, had two years ago an epithelioma cut out of his lip. Eighteen months afterwards he complained of trouble about the jaw, which was erroneously diagnosed as carbuncle, and poulticed. When Mr. Heath saw him he at once detected epithelioma, and removed the whole of the front of the lower jaw, extending from behind the bicuspids on each side. Any attempt to save the lower portion of the jaw in these cases was a mistake, and disease was liable to recur. Mr. Heath mentioned some instances in which this had occurred. Referring to the deformity of the parts following the removal of the centre of the jaw, the speaker said that his experience went to show that all such appliances failed, either because the patient could not wear them, or on account of the extreme strength of the muscles pulling the two segments of the jaw together.

There was still a third class of cases, namely, those following primary growth in the tongue. A specimen was shown of epithelioma of the front of the tongue, also involving extensively the tissues about the lower jaw. The case seemed a desperate one, but to relieve the man's pain an operation was decided upon. His recovery was perfect, and he was alive and well sixteen years afterwards. These cases showed how important it was to recognise the condition, and deal with efficiently when discovered.

The Chairman said, that a more interesting communication it had not been his good fortune to listen to for a long time. Mr. Heath had put the matter so exceedingly clearly before them that they would be able to recognise the nature of them when they arise. It was so many years he (the Chairman) had practised that he did not feel capable of criticising the paper, but he had listened to it with the greatest joy.

Mr. STORER BENNETT would like just to endorse, as far as he might, the view of Mr. Heath as to the unsatisfactory results when two halves of the jaw have been removed, obtained by any attempt to keep them separate by artificial means. Some twelve or fourteen years ago, one of his colleagues at the Middlesex Hospital had occasion to separate the jaw, he (Mr. Bennett) made an apparatus with two joints and pins for attaching to the side of the portion of the jaw from which the bone had been removed, this kept the two halves apart, and were made to work one with the other, for a time they seemed satisfactory, but the parts contracted to such a considerable extent that finally the whole thing had to be abandoned ; he had seen similar cases from time to time, but that case came under his own personal treatment and observation, and he thought it would be the experience of most that the parts always contracted.

The CHAIRMAN remarked, that Mr. Heath was now obliged to leave, but they would agree with him that they could not allow him to do so without expressing their thanks for his very valuable paper.

Mr. HEATH desired to thank the members for their kind reception of his Paper, which it had been a pleasure to him to give, and he was amply repaid if they had been interested.

A vote of thanks to Mr. Heath was carried by acclamation.

In the absence of the President, the Secretary read the valedictory address. In saying a few words of farewell on leaving the presidential chair of this society, Mr. Hutchinson felt that his first duty must be to offer hearty personal thanks to the members of the Council and of the society who had so largely contributed to the success of the meetings, and who, by their support, had rendered his year of office one of great pleasure, and had lightened the burden of his great responsibility. The Treasurer, Mr. T. A. Rogers, had been a tower of strength, for his long association with the society, his loyal conservation of its best traditions, and his unfailing good judgment. The success which attended the society's conversazione to the British Dental Association was, in great measure, due to Mr. Ackery. The other Secretaries had also each spared no pains in the execution of their duties, and the supply of papers and of interesting casual communications formed the strongest evidence of the zeal of Mr. Maggs. During the past year the curator, Mr. Storer Bennett, had completed the supplementary catalogue of the museum from 1884 up to the present time. Every specimen in the museum was classified and numbered, but many numbered specimens were stored away in drawers and cupboards, awaiting the future re-arrangement or actual moving of the museum. The "resolutions of Council" had also been arranged, so as to be capable of ready reference. Few could realise what the labours of the sub-committee had been, and the grateful thanks of the society were due to Messrs. Bennett, Coffin, Gibbings, and Stocken, and the two Hon. Secs, for their efforts. The past year had been notable too for the number of nominations of new members. He felt they might look back with satisfaction on the work that had been done by the Society in the way of papers; for there had been one upon nearly every branch of their art. In February Dr. Arkövy dealt with the latest methods of contour and crown work. Dr. Silk with "Bromide of Ethyl in Dental Surgery," in which he proved very much to the satisfaction of the Society that the strong faith, expressed in his (the President's) Inaugural Address in the value of nitrous oxide, was fully justified, placing it in the first rank as an anæsthetic for dental purposes. Dr. Job Collins had read a useful paper on associated and related ocular and dental diseases, destroying some pleasant and most cherished illusions! Mr. Pearce Gould had added to their store of knowledge by his valuable paper on a fatal case of impacted tooth-plate. Mr. Douglas Caush had given a capital account of exostosis illustrated by some beautiful sections shown by the prejection-lantern. Then Mr. Balkwill, of Plymouth, sent a short paper, the result of much research on morphological dental irregularities. Mr. Sewill furnished a paper verifying Dr. Miller's researches in the artificial production of dental caries and this also was illustrated by the lantern. Mr. Hopewell Smith had contributed a very instructive paper, the result of earnest work on a method of preparing sections of teeth and bone to show hard and soft parts in combination. In December a very original and interesting communication had been given by Mr. Hooton, of Manchester, on his invention of a method of moulding continuous gum to any case by means of set matrices as easily as vulcanite. And at the present meeting Mr. Christopher Heath, so well known for his classical work on "Diseases of the Jaws," and above all for the warm interest he had always taken in dental matters, as testified by his position as Examiner on the Dental Board, and as Consulting Surgeon to the Dental Hospital of London, had come to address the Society. Turning to the things left undone he mentioned some suggestions made in his address of last February. He had then spoken of the possibility of the Society being called the "Royal Odontological Society," but in the uncertainty as to their future habitation it did not seem opportune to move in the matter at present. He had spoken of the day when every qualified dental surgeon would regard membership of this Society as a higher diploma, but he had never advocated that it should be regarded as a qualification. Referring to the decision of the Lord Chief Justice and other judges on the use of the title, "Doctor" by qualified medical practitioners, he hoped the day was not far distant when the same law should be applied to dental practitioners who styled themselves "Doctor" when they did not possess a registrable medical degree. Their ranks had been thinned during the year, by death and by resignations, and included the loss of a very distinguished honorary member, Professor Wedl. Much attention had been given to trying to find fresh quarters, but in December unofficial information had reached the Council that the Dental Hospital would extend its building, so that for some time at least no need arose for seeking a fresh home. He wished to express his earnest hope that some plan might eventually be found, by which the Odontological Society and the Dental Hospital of London might secure a building which would be amply large enough to hold the Odontological Society, the British Dental Association, and the Metropolitan branch, with museums and library, under the roof of the Dental Hospital, but at the same time distinct from the hospital portion of the building and accessible to all members and to students of other hospitals. In conclusion, he referred in graceful terms to his successor in the Chair, and to the pleasant and harmonious way in which the members of the Society had supported him during his year of office.

The meeting concluded with the announcement of the election of the officers for the new year, the usual vote of thanks to the retiring officers. The Chairman spoke in eulogistic terms of the president and other officers for the past year.

Students' Society, London Dental Hospital.

ORDINARY GENERAL MEETING held December 14th, 1891, Mr. E. LLOYD WILLIAMS, President, in the Chair. The minutes of the previous meeting were read and confirmed.

On casual communications being called for, Mr. SCHELLING showed a lower molar tooth, which had two gold fillings put in forty-three years ago by an American operator. The tooth was removed because it was painful and loose.

The PRESIDENT remarked that it was a very interesting specimen, and it looked as if the filling was partly composed of solid bits of gold.

Mr. C. S. GARDNER showed two upper first molars removed from the same patient with four roots each.

Mr. MOSELY showed an upper model with a well-marked supplementary lateral incisor.

The PRESIDENT then read the following list of gentlemen nominated by the Council for office-bearers for 1892, to be elected at the Annual General Meeting. President, Mr. W. B. Paterson ; Vice-Presidents, Mr. E. Preedy, Mr. L. May ; Treasurer, Mr. D. R. Gabell ; Secretaries, Mr. W. S. Holford, Mr. T. H. Clarence ; Curator and Librarian, Mr. H. S. Prideaux ; Council, Second Year's Students, Mr. E. Stevens, Mr. H. G. Danolds, Mr. H. Goodman, Mr. S. H. Hayward, Mr. Northcroft ; First Year's Students, Mr. H. H. Ham, Mr. Jones, Mr. Evans, Mr. Badgery.

The PRESIDENT then called upon Mr. Herschell for his paper on gold crowns.

Mr. GARDNER, on being called upon to open the discussion, said that he thought that it was a most practical paper. He should like to ask Mr. Herschell a few questions on which he was not quite clear. First, whether in setting his crown, he would put a pin in the root or solder it to the inside of the crown. With regard to pivot pins, he thought the split pins sold at the depôts for Balkwill's pivots were very good. He should like to know the best way of shaping a root—whether to use corundum disks, burrs or scalers. When he was making a crown, he preferred to take a model, and do as much as possible out of the mouth, as it often was very painful to the patient to have the collar fitted to the root and tried on several times. He should also like to know whether gutta percha or osteo was the better for fixing a crown.

Mr. NORTHCROFT wanted to know if Mr. Herschell ever used shouldered burrs for trimming roots. Mr. Herschell had said that one should use different grades of solder for different parts of a pivot, but it seemed to him that when the tooth was finally invested for soldering to the pin, that if the original solder did melt, it did not much matter, as all the parts were fixed and could not move. With regard to an overlapping joint for the collar, if you bevelled each edge, he did not think you got any extra thickness. In fixing a gold crown with amalgam, if the gold was varnished with a solution of shellac, the mercury did not come in contact with the gold. For making a die, he preferred to use fusible metal and moldine instead of zinc and sand.

Mr. MORDAUNT asked Mr. Herschell whether he was ever bothered with the platinum frill curling up when soldering it to the pin.

Mr. PARRIS recommended a mixture of osteo and amalgam for setting crowns.

Mr. CLARENCE said, that he found cupped corundum wheels with a guide pin very useful for trimming roots.

Mr. F. J. BENNETT said, that he came as a visitor, and that he was very much struck by the improvement in the Society to what it was in his day. He thought it very much up to date, and the papers very practical.

Mr. HANKEY mentioned that trephines were useful for trimming roots.

Mr. HAM suggested making the collar rather smaller than the root, and pressing it on.

Mr. GABELL wanted to know the best way of fixing the pin to a tube tooth, and also whether platinum crowns were easily workable.

Mr. GOODMAN thought corundum cups excellent for trimming roots, and that if thicker platinum foil was used, it would not curl up when being soldered to the pin.

The PRESIDENT said, that he noticed that students usually made plain pivots and not collar crowns. In putting a tube up a root, he first fixed it in position with a little osteo, and then packed Sullivan's amalgam round it, the ordinary kinds being useless from the shrinkage that always occurred. He never used platinum foil, but burnished one or two thicknesses of 60 gold foil. When making a pivot, after having fixed the tube, he placed the pin in it and bent it back towards the tongue, he then took an impression with hardbake (stent and shellac), this he withdrew and covered it with a very thin layer of stent, and replaced in the mouth, by this means he got a very good impression of the root, from this he cast a model in sand and plaster, having the pin fixed in the model, he then cut off the bent end of the pin, and burnished one or two thicknesses of No. 60 gold foil to the root, fitted, backed, and placed his tooth in position, and soldered on the model, by this way he got very good pivots. When trimming roots he always injected cocaine, as it lessened pain and reduced hæmorrhage.

The PRESIDENT then called on Mr. Herschell to reply, who said :—

Mr. PRESIDENT and Gentlemen, before replying to the numerous questions raised with regard to my paper, I wish to point out that the paper is only intended to explain a method of making and fixing gold crowns ; and I fear that if I had mentioned all the different methods brought forward, and had enlarged upon them, we should not have left the hospital to-night. The paper is essentially for students, and as it is not always convenient for them to have some of the implements by which the work can be rendered more easy. I have endeavoured to point out a way of arriving at the same results with the instruments at hand. Mr. Gardner has said, that I did not inform the meeting whether I fixed the pin in the root and the crown afterwards, or soldered the pin to the crown and fixed the whole on the root. I should of course have mentioned that, in the case of an all gold crown, the pin is fixed into the root first and the crown adjusted afterwards, and that in cases where a porcelain front is fixed, the pin having previously been soldered to the top of the cap, the whole is cemented into the root. With reference to taking a model of the root and fitting the cap to it, I think that the continual pressure of the collar on the plaster would rub it, and consequently make the crown too small. Cementing with gutta percha : as I have never tried this method, I am really not in a position to say anything about it, but do not think I, personally, will ever adopt this plan. Replying to Mr. Northcroft, root facers are a somewhat expensive luxury for students, and I did not therefore mention them. As to using solder of a lower melting point, I think that if the same solder were used for joining the pin to the foil and building up the back of a pivot, there would be a tendency for the first solder used to flow again, and thus undo the good already done. However, if the pivot be properly invested, I think, with care, the result might be satisfactory. I think perhaps Mr. Northcroft's method of painting the pin with shellac, when the pivot is to be fixed with amalgam, very practical. With regard to the material used for taking the metal cast it really does not matter what is used so long as the result is the same, and it appears to me that the substance most handy is the one to use. One gentleman says, he has found that the foil curls up in soldering. Well, I think that this can be avoided if a certain amount of care is exercised, especially if platinum foil is used, and I myself have not yet found this difficulty, perhaps because I always go about this part of the operation very quietly. In answer to Mr. Clarence's query about getting the angles that appear round roughly shaped-up roots, smooth, with a cylindrical corundum disk, I should like to point out the shape of a root, say a central incisor. This root's labial surface is the segment of a larger circle than the palatal surface, and if you use a cylindrical cup there will be ledges left at the mesial and distal sides of the labial surface, likewise at the palatal surface at the back. Mr. Hall has said, that I mentioned nothing about measuring round the root with a wire, but I beg his pardon for contradicting him, as I mentioned this method as well as the silk way, but did not enlarge upon them, as I thought everyone would be able to perform this operation without its being described. Mr. Ham's method of making the collar a trifle smaller than the root, is, of course, good, but why put the patient to the pain of having it driven forcibly up, when, by a tap or two on the small rounded projection of an anvil, the same result can be obtained? Another gentleman has asked me which I consider the best method of fixing a tube tooth, whether with osteo, silk, or sulphur. With regard to silk, it decays, and off comes the crown. The osteo, in coming in contact with the acids in the mouth, is liable to be dissolved away, and as the sulphur seems to last better than either of the others, I think it is clearly the best. I might mention that it is as well, if practicable, to burnish the projecting end of the pin, so that there is the extra advantage of a rivet.

The PRESIDENT proposed a vote of thanks to Mr. Herschell for his paper, and announced that the next Meeting would be the Annual General Meeting, held January 13th.

Dental News.

Victoria Dental Hospital, Manchester,

THE 6th Annual Dinner of the Past and Present Students of this Hospital took place on Saturday, December 19th at the Grand Hotel, Mr. T. Tanner, the Lecturer on Dental Mechanics at Owen's College, occupying the Chair.

A large number of guests were present including most of the members of the Hospital staff, Mr. Copinger—Vice-chairman of the Committee of Management of the Hospital—Dr. Ashby, Dr Stallard, Mr. J. W. Smith, F.R.C.S., the Dean of the Liverpool Dental

Hospital, &c. This year the number of toasts was, in accordance with a pretty generally expressed wish, reduced as much as possible.

After the usual loyal toasts had been proposed by the President and duly honoured, Mr. J. W. Seville (Exeter) proposed "The Manchester Medical and Dental Schools," which was responded to by Dr. Ashby for Owen's College, Mr. J. W. Smith for the Infirmary, and Mr. W. A. Hooton on behalf of the staff of the Dental Hospital. Mr. F. L. Tanner then proposed "Our guests and visitors," and this was responded to by Mr. R. Edwards (Dean of Liverpool Dental Hospital) and Mr. Copinger.

The last toast was that of "the President" proposed by Mr. G. G. Campion, and drunk with musical honours. During the evening a number of songs, pianoforte and violin solos, recitations, &c., were given by Drs. Ashby and Stallard, and Messrs. C. A. Smale, F. V. Walker, J. C. Singford, G. Kershaw, A. Dreschfeld and others.

It is gratifying to be able to report that the dinner was in every way a thorough success, and every one agreed that a most enjoyable evening had been spent.

Liverpool Dental Hospital.

The thirty-first annual meeting of the subscribers and friends of this institution was held yesterday, at the Town Hall. The Mayor, Mr. J. de Bels Adam, presided, and there was a good attendance, including Alderman Grindley, Dr. Waite, Messrs. G. Wynne, C. Birchall, A. Ralph, H. E. Brakell, J. R. R. Scott, J. Wannop, T. Mansell, R. Edwards, W. L. Jackson, &c.

The committee, in their report, which was read by Mr. Jackson, the honorary secretary, stated that the total number of patients admitted since the formation of the hospital amounted to 282,181. During the past year the number of patients treated at the hospital had been 15,769 and of operations 21,371. The committee recorded with thanks a donation of £5 from the Earl of Derby, the president of the institution, and one of £7 7s. 2d. by Mr. J. Wannop, to liquidate the balance of the "Brackell Memorial Fund;" also a donation of £5 5s. from A. A., per Mr. L. S. Osborne, and others of smaller amount. The financial statement, submitted by Mr. Scott, the honorary treasurer, showed a total expenditure of £342 18s. 2d., and a debit balance of £18 8s. 5d. The receipts included annual subscriptions, £138 12s.; donations, £13 4s.; students' fees, £59 17s.; and patients' contributions, £65 15s.

The MAYOR, in moving that the report and statement of accounts be adopted, printed, and circulated, said he was quite surprised that such a useful institution should have such poor support from the general public. The total sum expended (£342) seemed to him a very small amount indeed, looking at the great good done by the institution, 15,769 patients having been treated during the year; and he hoped the public would come forward, and contribute more generously to its funds. (Hear, hear.)

Dr. WAITE seconded the motion. He said, in order to place the hospital on a proper footing, however, and to provide it with all the appliances requisite for a dental surgery, an income of £500 a year was required, and he thought the institution had a very good claim on the public for that amount. There were 15 students in the School of Dental Surgery connected with the hospital; it was affiliated with the University, and the prospects for the future were exceedingly encouraging.

The report was unanimously adopted.

Mr. MANSELL, in introducing the two students who had obtained the Quinby prizes, explained that in the autumn of 1890 Mr. Henry Quinby generously placed at the disposal of the medical staff £20 annually for five years, to be competed for by the students, the amount to be divided into two prizes of £12 and £8. It was stated that in addition to these two prizes, another was offered by Mr. Ash, of London, for the best paper on the subject of alveolar hæmorrhage.

APPOINTMENTS.

Mr. HARRY A. FORSYTH, L.D.S.Eng., has been reappointed House Surgeon to the Dental Hospital of London.

H. BALDWIN, M.R.C.S., L.D.S., has been appointed Assistant Dental Surgeon to the Dental Hospital of London, *vice* Lawrence Read, resigned.

WILLIAM HERN, M.R.C.S., L.D.S., has been appointed Dental Surgeon to the Dental Hospital of London, *vice* Claude Rogers, resigned.

GEORGE ROWELL, M.R.C.S., has been appointed Assistant Anæsthetist to the Dental Hospital of London.

FRED W. TA'BOIS, L.D.S.Eng., has been appointed Dental House Surgeon to Guy's Hospital.

Mr. W. BURT, L.D.S.Eng., has been appointed Honorary Dental Surgeon to the Weymouth Royal Hospital.

Mr. T. TAYLOR GENGE, L.D.S., has been appointed Dental Surgeon to Bristol General Hospital, *vice* Mr. T. COOKE PARSONS, deceased.

THE DENTAL RECORD, LONDON: FEB. 1, 1892.

DEATHS UNDER ANÆSTHETICS.

DENTISTS had more to do with the introduction of anæsthetics into general use than any other branch of surgery, and have, in their private practice, as well as their hospital work, as much or more to do with these agents than other members of the medical profession. This is probably why dentists have always shown so keen an interest in the question of the relative safety of anæsthetics. But the whole world is just now ringing with the subject, and as happens, when any medical matter becomes, so to speak, public property, letters overflow from the professional press into the daily and weekly papers, and the "smart young men" who undertake to pilot the society papers through the deep waters of technical science, rush impetuously into paragraph, which, even if they lack accuracy and common sense, at least read crisply, and bring crushing censure upon "some person or persons unknown." People read this kind of writing, and as it doesn't take long to write on a subject about which one knows none of the first principles, so we may expect much more inconsequential indictments anent anæsthetics in the bronze era of literature. Gentlemen whose Cassandra warnings have escaped the professional ear appeal,—stating their name and address,—to the more emotional public reader, and reiterate their pet fads in the daily press. These are, as we have said, signs of the times, and we are bound to enquire into the matter, and ask ourselves whether the profession have not shown more than the usual professional apathy to the cries of the public. We think there has been a great deal too much of this lethargy, and we believe the ventilation in the daily press will do good. It is said often enough that fatalities should be hushed up for fear of frightening "the others." But surely the "bogey" age has gone by. The public like their daily dish of horrors, and if the new journalism points by paragraphs, and improves tragic situations by high faluting, it makes life more tolerable to the survivors, so what would you? But what does rather impress the public is that doctors differ upon such vital points as the relative safety of anæsthetics. We are then glad to see that at last some effort is to be made to collect clinical evidence upon the points at issue. Our readers will remember that we published in last summer an abstract of a paper by Dr. Dudley Buxton, which he read at Bournemouth, and which urged the necessity of treating the subject clinically, *i.e.*, from the observations made at the bedside of patients. The British Medical Association at once took up Dr. Dudley Buxton's gauntlet, and with that regard to the welfare of the profession and public at large which has always characterised that body, appointed a committee with Mr. Jonathan Hutchinson, F.R.S., as president, Dr. Dudley Buxton, Dr. Eastes, Dr. Hewitt and other specialists as members, and made a grant to cover expenses. Sub-committees have also, we learn from the Medical Association Journal, been appointed for Ireland and Scotland as well as England, and very carefully prepared books issued for the purpose of recording *every case* in which an anæsthetic is given throughout the year 1892. Surely the record, imperfect though it may be, which our daily papers gives us of the almost weekly deaths from anæsthetics point to something wrong somewhere, and if the British Medical Association's committee are able to throw any light upon this matter they will be doing a very good work and deserve all the support we can give them.

OBITUARY.

We regret to announce that Mr. G. Claudius Ash, the eldest son of the late Claudius Ash, died on the 17th of January, in the 78th year of his age.

Mr. G. C. Ash was first articled to the late Mr. Thomson, of George Street, Hanover Square, and afterwards practised for some time as a dental surgeon, but subsequently retired from the profession to join his father in the firm which has so long been known under the title of

Claudius Ash & Sons. He was for a long time in charge of the manufacturing department of the firm to which he devoted great care and attention.

Although of a very retiring disposition, Mr. G. C. Ash took a deep interest in all that concerned the dental profession. He was a great lover of mechanical science, for his mind was constantly at work on some question or other in it which interested him. He was a frequent attendant at the lectures of the Royal Institution of Great Britain, and the Society of Arts.

As an employer, Mr. G. C. Ash was most highly respected; he was a wise and experienced adviser in the management of the firm, and he lived an honorable and upright life.

GOSSIP.

Guy's Hospital Dental School.

THE Dental men at Guy's Hospital gave a highly successful Smoking Concert on Friday, December 18th, at the Bridge House Hotel, London Bridge.

Mr. M. F. Hopson, Dental House Surgeon, occupied the Chair, and he was supported by the following Members of the School Staff. Mr. Newland-Pedley, Dental Surgeon, Messrs. Baker, Badcock, Murray, Pillin, and Rouw, Assistant Dental Surgeons Dr. Silk, Dr. Cock and Mr. Fripp, Anæsthetists.

The Chairman in his opening remarks welcomed the representatives of the Dental Hospital and the National Dental Hospital who were present. He also alluded to the good fellowship which existed between the allied Medical and Dental Schools at Guy's, members of the former comprising at least half of the audience.

A lengthy and excellent programme was well sustained. Songs being contributed by Messrs. A. L. Allworth, Apthorpe, A. R. Henry, Morris, Oram, Sarjeant, Spon, Wallis and Vick. Messrs. F. P. Allworth, and A. J. Makepeace gave powerful recitations; and instrumental selections on the violin were efficiently rendered by Messrs. Webb and Hills. A vote of thanks to the Chairman, proposed by Mr. F. W. Ta'Bois, which received musical honours terminated an interesting gathering. Mr. A. R. Henry presided at the pianoforte, and Mr. Harold Stoner, acted as Hon. Sec. to the organizing Committee.

The Editor of the *Nursing Record* writes "concerning a Pension Annuity Fund, together with a Sick Fund, which we have, after something like eighteen months negotiations and arrangements, been able to secure for trained nurses :—

"It is not a bolstered up philanthropic scheme, but the calculations and the tables have been formed on business-like lines, and it is believed that the benefits given will be covered by the premiums, thus making it thoroughly self supporting. For years past 15,000 or thereabouts of trained nurses in this country have been hitherto unsuccessful in having provided for them a pension or sick fund thoroughly safe and solid, and it is with very great pleasure that we have been able to conclude satisfactory arrangements with the two very important Assurance Companies who come to our aid in the matter."

He wishes it to be widely known and especially to nurses that both a pension and a sick fund now await their taking up and their support.

The *Nursing Record* for January, 1892, contains full details.

Journalistic Memorabilia.

The Law Concerning Hypnotism in Sweden.—The question whether a hypnotized person who acts at the suggestion of others is responsible for his actions, is considered in Sweden to depend upon the fact whether he knew of the danger to which he exposed himself in being hypnotized, and submitted to it voluntarily. If so, by the law of that country, he is held responsible, otherwise not.

A Protector for the Upper Teeth while Extracting Lower Teeth.—The profession is well aware of the danger of breaking or of chipping the upper teeth by a blow from the forceps while extracting a lower tooth, especially one that is more or less exostosed Careful operators usually apply a napkin against the upper teeth just over the tooth to be extracted, and those who have used this method have found great difficulty in keeping the napkin in place, as the hand that holds the napkin is in use under the maxilla and cannot therefore be depended upon for the double service. To overcome the difficulty take an impression of a medium-sized natural upper denture ; take a cast of it, wax the cast over the teeth to about the thickness of an eighth of an inch on the cutting edges and running back as far as the second bicuspids, allowing the wax to reach only to the margins of the gums and made much thinner than on the cutting edges. Then invest as in any case to be vulcanized and pack with soft or vellum rubber, preferably the black. After vulcanization trim with sharp scissors, boil and wash, and allow to remain in the air for two or three days. I suggest the making of three sizes. Being made of soft rubber insures a fit, as the elasticity of the rubber allows it to be adapted to any mouth and holds it there securely. Vulcanized soft rubber after a time becomes hardened and brittle to a certain extent, as is seen in artificial plates. When in this condition, place it in boiling water, adding a little borax, and allow it to boil from five to ten minutes. This will restore the elasticity to the rubber, and it will then be in as good condition as when first vulcanized. I think a trial will convince anyone of its usefulness and fully repay him for any trouble he may have had in making the device.—Dr. W. G. FOSTER (*Cosmos*).

LUPUS OF THE TONGUE.—A case of semisclerous lupus of the tongue is described by Prof. H. Leloir. The patient a girl of 15 years suffered from lupus vulgaris of the nose, pharynx, and larynx, with scrofulo-tuberculous affection of the submaxillary, cervical, and subclavian glands. From time to time she had attacks of the so-called white erysipelas of the scrofulous. She had also had several attacks of pulmonary tuberculosis and of zona of the interscapular region. Upon the dorsum of the tongue were nodules of various sizes, projecting the mucous membrane, nearly round in shape, hard, and recalling the aspect of certain forms of syphilitic glossitis. Their color was rather pale. None were ulcerated, though some presented superficial yellowish erosions. Tissues of some depth separated the different groups. The hard and the soft palate were the seat of similar lesions. The lupous nature of the nodules was evinced by the following facts : The co-existence of incontestable lesions of lupus, the worthlessness of antisyphilitic treatment, the result of histological investigation, the examination of the bacilli and the success of experimental inoculations.—*Revue de Laryngologie.*

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Original Communications.

NOTES ON TWO YEARS' USE OF COCAINE HYDROCHLORATE IN EXTRACTION OF TEETH.*

By HERBERT B. EZARD, L.D.S., EDINBURGH.

MR. PRESIDENT AND GENTLEMEN,

It is not my intention to-night to give you an exhaustive paper on Cocaine. I merely lay before you observations made during two years' use of Cocaine Hydro-chlorate in extraction, in the hope that these may induce others, who have experimented with this drug, to give their experiences.

Briefly stated, the action of Cocaine is as follows:—Small doses stimulate, large doses paralyse.

The drug affects, firstly, the cerebral hemispheres, then the medulla, and, lastly, the spinal cord.

Giddiness and slight headache are the symptoms which I take to be the first sign of the toxic action of the drug, and in 125 tabulated cases (in doses ranging from ½ to 4 grains) I have seldom observed worse effects than these. In the eye may be noticed dilatation of the pupil and paralysis of accommodation, which is sometimes so marked that the advancing and withdrawing of a hand-mirror before the eye causes no change.

I have no hesitation in saying that in the eye will be found the first indication of the constitutional action of Cocaine, and these symptoms will become very marked, even alarmingly so, and sometimes accompanied by what can only be described as an appearance of marked cyanosis, without the patient feeling the slightest sensation of anything being amiss. These symptoms often give to the face an expression of terrible fright. Sometimes there is noticeable a sweaty flush—this being generally accompanied by great talkativeness and complaints of a "draught across the ankles."

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* A Paper read before the Odonto-Chirurgical Society of Scotland.

So much for general effect. With regard to the dose for extraction, no absolute rule can be laid down, but, on the average, I should say two-thirds of a grain is the general dose necessary.

Mode of injection :—The great mistake made is injecting too far up the alveolus, at a point corresponding to the *apex* of the root. This only passes into the tissues of the cheek, is rapidly absorbed into the facial vessels, and thus carried into the circulation immediately. The proper point of injection is at a line corresponding to the *margin* of the alveolus. Here the needle is passed in deeply with a sudden prick, which is hardly felt, and by being injected in this way, the solution passes to a great extent into the periosteal lining of the socket, thus giving it a chance to permeate to the apex of the root : this takes from 2 to 5 minutes. One injection only should be made on each side of the tooth, be it incisor or molar, as several only cause unnecessary pain, and if punctures are made in close proximity, the solution simply passes in at one and out at the other. The three lower molars require one-third more dose than any other tooth.

The pricks of the needle may be anæsthetised by gently but firmly pressing the flat surface of the finger-nail against the gum until it becomes bleached, or by drying the gum and applying a 20 per cent. solution of Cocaine Hydro-chlorate for 2 or 3 minutes.

The solution *must* be freshly prepared for *every* case. This is best done by using $\frac{1}{2}$ gr. tabloids (made up with Sulphate of Sodium, this being an astringent, and possibly useful in healing the wound). The percentage of solution should be about 10 per cent. (1 grain in 10min. of hot water). With this *fresh* solution and *absolute cleanliness*, I emphatically believe that there is no danger in the use of this drug for extraction. Any solution of Cocaine, if kept twenty-four hours, may develop sufficient fungi to be very dangerous if injected near the base of the brain, although there may be no danger in its use in minor surgery at more distant parts. This is a well-known Pharmacological fact, and this fact and uncleanliness of syringe and needles I believe to be the sole cause of the alarming accidents which have happened with this drug.

A method of obtaining both cleanliness and asepsis is as follows :—After use, fill the syringe with very hot water, and squirt this violently through the needle—draw through the needle about 3 min. of Listerine or any reliable antiseptic compatible with Cocaine Hydro-chlorate—take off the needle and cap the syringe, retaining in it the fluid—dry the needle and keep it in a wire lubricated with Dental Engine Oil or Vaseline.

With regard to constitutional conditions, variation of the dose is necessary. I have drawn up a table of 25 cases as follows :—

Miss E., age 23, condition anæmic, $M\frac{2}{0}L$ tooth, dose ½ grain, time 3 minutes. No pain—a feeling of the tooth leaving the socket—slight vertigo.

Mr. A. M., age 16, condition robust, $C\frac{0}{R}$ tooth, dose ½ grain, time 3 minutes. No pain—a feeling of the tooth leaving the socket—no vertigo.

Mr. W. S., age 22, condition Phthisis, $M\frac{0}{1}L$ tooth, dose ½ grain, time 3 minutes. Perfect anæsthesia—very long roots—no toxic symptoms.

Mr. W. S., age 22, condition laryngeal Phthisis, $I\frac{2}{0}R$ tooth, dose ½ grain, time 3 minutes. Perfect anæsthesia—highly granulated gum—no toxic symptoms.

Mr. B., age 17, condition normal, $B\frac{0}{1}L$, dose ½ grain, time 3 minutes. Feeling of tooth leaving socket—no toxic symptoms.

Same patient, $B\frac{0}{1}R$ tooth, dose ⅔ grain, time 4 minutes. No feeling—both teeth interlocked.

Mr. E., age 45, condition robust, $I\frac{1}{0}L$ tooth, dose ½ grain, time 3 minutes. No anæsthesia—added ½ grain, obtaining very little—marked cardiac depression, which was relieved by administering strong coffee—patient under the influence of alcohol.

Mr. S., age 65, condition robust, $L\frac{0}{4}$ tooth, dose ½ grain, time 3 minutes. Immediately after this, 1 grain was injected equally between $B\frac{1}{0}R$, $I\frac{2}{0}R$, $B\frac{1}{0}L$—no feeling—no toxic symptoms.

Mr. W., age 23, condition anæmic, $B\frac{0}{1}R$ tooth, dose ⅔ grain, time 5 minutes. Excitement—marked vertigo—loss of accommodation—no pain.

Mr. J., age 26, condition Gast. Ulcers, $M\frac{0}{2}L$ tooth, dose ½ grain, time 5 minutes. Flatulence—slight vertigo—no pain.

Miss M‘V., age 18, condition normal, $M\frac{0}{1}R$ tooth, dose ¾ grain, time 3 minutes. Operation lasted 10 minutes with elevators—slight sensation at end—no toxic symptoms.

Miss C., age 14, eczema, $B\frac{2}{0}L$ tooth, dose ¾ grain, time 5 minutes. No pain—no symptoms—cold day.

Same patient, $M\frac{0}{1}R$ tooth, dose ¾ grain, time 3 minutes. Vertigo—highly accelerated pulse—elevated with no pain—hot day.

Miss S., age 22, condition anæmic, $M\frac{L}{2}\times\frac{R}{3}$ tooth, dose 1 grain, time 4 minutes. Vertigo—marked dilatation—pallor—no pain.

Mrs. T., age 42, condition normal, dose $\frac{1}{3}$ grain, time 3 minutes. For excision of small tumour on cheek—10 minutes, alarming dilatation—1 oz. whisky in water caused this to disappear in 5 minutes—no vertigo—patient conscious of nothing abnormal.

Miss K., age 15, condition normal, 9 teeth, dose $1\frac{1}{2}$ grains, time 20 minutes. 3 injections extending over 20 minutes—high pulse rate, sometimes 120—patient felt no symptoms at all.

Miss G., age 23, condition anæmic, $I\frac{1\times2}{0}L$ tooth, dose $\frac{1}{2}$ grain, time 2 minutes. Patient nervous and hysterical—seized with vertigo, and fainted — I then extracted — pulse regular, but faint — inhalation of $iij^{\text{min.}}$ Amyl Nitrite caused complete recovery.

Same patient, $I\frac{1\times2}{0}R$ tooth, dose $\frac{1}{2}$ grain, time 4 minutes. 8 days after — administered 1 oz. whisky before injection — no bad symptoms, but slight excitement.

Same patient, $M\frac{1}{0}L$ tooth, dose $\frac{1}{2}$ grain, time 4 minutes. 6 months after—same treatment, same result.

Miss D., age 32, condition robust, 6 teeth, dose 1 grain, time 5 minutes. 6 lower fronts—no sensation—no symptoms.

Mr. K., age 24, condition normal, $I\frac{2}{0}$. $B\frac{1\times2}{R}$ teeth, dose 1 grain, time 5 minutes. 6 lower fronts—no sensation—no symptoms.

Miss W., age 9, condition normal, $M\frac{1}{0}L$ tooth, dose $\frac{1}{2}$ grain, time 3 minutes. Very nervous—slight headache for 10 minutes.

Mr. A. G., age 32, condition robust, $M\frac{0}{3}L$ tooth, dose 1 grain, time 3 minutes. Patient been 5 hours without food—vertigo.

Miss S., age 25, condition anæmic, $M\frac{0}{2}L$ tooth, dose $\frac{1}{2}$ grain, time 2 minutes. Marked dilatation.

Same patient, $M\frac{0}{3}R$ tooth, dose $\frac{1}{2}$ grain, time 2 minntes. Second injection 8 minutes after first—cardiac depression—cyanosis—headache—complete loss of accommodation—gave 1 oz. of whisky in water, and inhalation of $iij^{\text{min.}}$ Amyl Nitrite—patient all right in 5 minutes, all but slight headache.

From this table, which is a fair sample of the whole table of 125 cases, I deduct as follows :—

For anæmic men $\frac{1}{2}$ to $\frac{2}{3}$ grains is sufficient, and has caused with me no more alarming symptoms than the complaint of a little giddiness.

For anæmic women $\frac{1}{4}$ to $\frac{1}{2}$ grain I find an efficient dose, without any worse effect.

For patients of either sex, of robust appearance, 1 grain does not seem to me too much to inject in a 20 per cent solution.

The two conditions—anæmic and robust, together with normal—are about all one can judge from the personal appearance of the patient, and of course a medical examination is out of the question.

Now, I would particularly call your attention to the following cases on the table.

1st. Nos. 3 and 4.—Patient in an acute state of phthisis laryngea. In this case both Chloroform and Nitrous Oxide were contra-indicated. The action of the injection was most complete, although the teeth were long-rooted, and in the second operation the gum was in an almost honey-combed condition.

2nd. No. 7.—This patient had consumed in his agony about a pint of whisky between 6 and 8 p.m. He is a powerful man over six feet high, and yet the cardiac depression was very alarming. [In another patient, M. 28, similar in stature and muscle to the above, who had been freely imbibing champagne, the injection of 1 grain was completely successful for extracting $M\frac{0}{3}R$ without being followed by the slightest toxic symptoms.]

3rd. No. 10—In this case the flatulence was most disagreeable in two operations, the vertigo being very slight. [On several occasions, with nervous females, I have noticed the fingers fumbling in the region of the heart, and on my enquiring, they have generally confessed to a feeling of flatulence, which can, as a rule, be dispersed with a 60 min. dose of Sp. ammon. aromat.]

4th. No. 12.—I have not been able to explain in this case the different effects of the hot and cold days. In my experience it is unique.

5th. No. 23.—This case was a pure experiment, there being in attendance another dental surgeon besides myself. Throughout the operation and afterwards the patient denied having felt in the least unwell, although the pulse rate was so high.

6th. Nos. 24 and 25.—This case tends to uphold my opinion that, in anæmic subjects, ½ grain is a sufficient dose, as the second injection caused such marked toxic symptoms.

I have come to the conclusion also that after a meal there is less chance of constitutional action. For the toxic symptoms I use the following antidotes.

For marked cardiac depression, accompanied by pallor, 1 oz. whisky in water, and inhalation of iij^{min} Amyl. Nitrite.

For vertigo and marked dilatation, 1 oz. of whisky in water. (To children for moral reasons, I give 30 to 40 min. sal volatile in water).

The question may well be asked—Why give whisky in preference to any other stimulant? My reason is as follows:—Up to June 1890 I had been experimenting with sal volatile, rum, brandy, and whisky, without being able to determine which was the best. At that time I was fortunate enough to meet a gentleman—a Scotchman, who is domiciled at Valparaiso. He gave me a deal of valuable information about Cocaine, and amongst other things, he mentioned the fact that "out there" very few people would touch whisky (or rather the raw grain spirit which there goes by that name) without the addition of Cuca Bitters. He also told me, as a fact, that a native postman will run almost continously for four days distances of 200 to 300 miles with no other sustenance than a bag of Cuca leaves, mixed with a fresh powdered lime. On reaching his destination he drinks about a pint of this whisky, sleeps all day, and then starts back again. This statement almost decided me, and on his remarking that he drank nothing but whisky, and plenty of that, and as he wanted five teeth extracted, with his permission I experimented on him with a large injection. For the five teeth I injected 4 grains, producing perfect anæthesia without the slightest toxic symptom.

Another reason for using whisky is this:—I fancy that I have noticed that the eye of a person intoxicated with whisky is very much contracted (more than with other forms of alcohol), and I think it quite possible that it acts in this way to counteract the vertigo and dilatation of Cocaine toxic effects.

The time these operations take may be put down as averaging 15 minutes from the time the patient enters the Surgery. The same fee may be charged as for nitrous oxide, patients as a rule expressing their satisfaction at not having been rendered unconscious.

Of the 125 tabulated cases, 101 were practically painless, 19 had a feeling of the tooth leaving the socket, and five were painful, but in three of the latter elevators had to be resorted to.

Before closing this paper, I must express my indebtedness to Mr. William Duncan, of the Royal Dispensary here, for much valuable information regarding the drug.

These, gentleman, are the notes I have made on this drug used merely as an item of every day practice, and in conclusion, I must say that I think Cocaine Hydro-chlorate is superior to Nitrous Oxide for two reasons, viz.—the patient is conscious, and therefore completely under the control and direction of the operator, and also, the time of anæsthesia is enormously prolonged, thus allowing the tooth to be deliberately and carefully extracted.

THE WORKROOM AND ITS TOOLS.

By W. Booth Pearsall, F.R.C.S.I., Dublin.

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It will be seen on the plan, published in the first article, that the wax-benches are placed between three grinding lathes, the bench being of the same width as the soldering bench previously described, all facing a window.

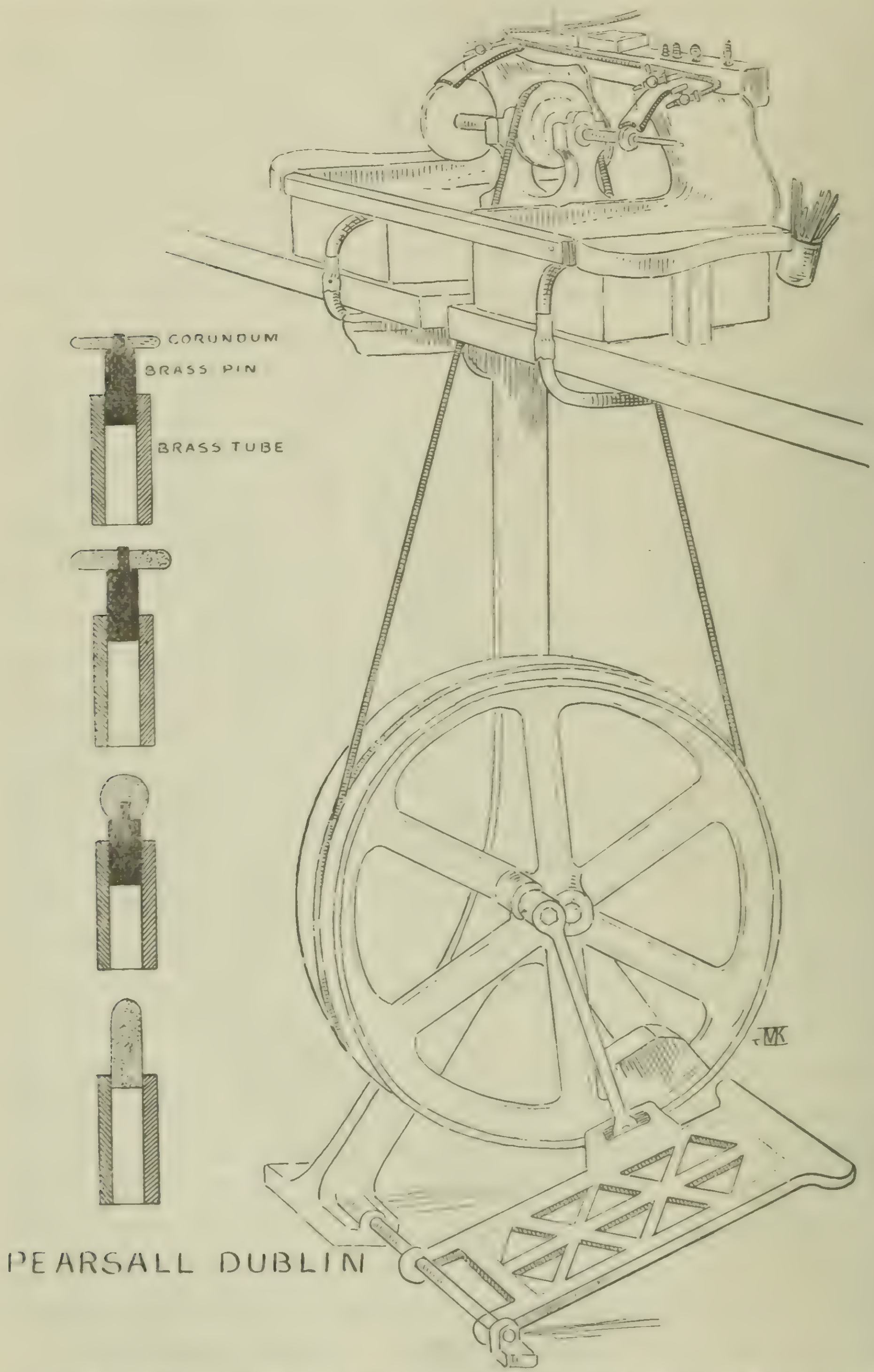
The width of each wax-bench between the lathes is 23 inches which leaves sufficient room for a workman to use either wax-bench, or any of the lathes, without inconveniently crowding a fellow workman. Swivelling across each wax-bench, in a horizontal direction, are placed Fletcher's small Argand burners, one to each bench. This excellent invention is for all purposes of dropping wax on models, heating wax-knives or other tools, by far the best and most economical heating-tool I know. It is so efficient and cheap (price 2s.), that I cannot understand why it is not invariably used in our dental workrooms, in preference to the more antique and expensive Bunsen burner usually seen, and which has a further disadvantage in the difficulty of regulating the size of the flame, without lighting back, and making a tremendous smell.

In Fletcher's Argand gas burner the consumption of gas, even when the full flame is used, is wonderfully small, when we consider the size and power of the flame. It can be perfectly controlled by the aid of a gas-tap, as the flame can be diminished to the faintest possible blue cap, just sufficient to resist the draughts in the room without going out. Across the window lighting the wax-benches and grinding-lathes is placed a 6-inch piece of wood, set at an angle of 45 degrees, and similar to the tool-rack I have described as holding the shears and pliers for the gold-benches. On this piece of wood is placed a double set of tools, one for each wax-bench. The set of wax-tools consists of four copper modelling tools, which are made out of copper wire $\frac{1}{4}$-inch thick. The end inserted in the wooden handle is first tapped and then screwed into the wood, so as to lessen the chance of its becoming loose and falling out of the handle, as usually happens in similar tools made of steel with a tang driven into the handle. The free end of the copper rod has been forged into a suitable shape on the anvil, and then carefully filed up to whatever globular or pointed form the dentist may desire. Silver would doubtless be a very suitable metal for this work but for the expense; copper has therefore been chosen on account of its relative cheapness, and the ease with which it can be shaped, either with the hammer or the file. These copper tools have now been some time in use, and the steel ones have been completely discarded for them. The property of retaining heat shewn by copper as compared with steel being a great time-saver. In addition to the modelling tools, there are a pair of cutting pliers, a pair of pliers with pointed noses, with which to bend the pins of vulcanite teeth, a pair of dividers, for working from measured points on a plaster model, in cases when dentures have to be duplicated, and a pair of old incisor tooth forceps for removing tube teeth from their plate pins, when the sulphur cement has been melted over the gas-burner, and an oil can. To these tools have been recently added a pair of callipers, invented by Mr. Amos Kirby, of Bedford, for correctly and rapidly determining the positions for swivels in edentulous cases. This simple but ingenious instrument is invaluable to dentists who use swivels and springs, as it enables them at once to determine the parallel positions of the swivels in almost any case requiring them, whether the case be one with teeth standing in the mouth, or altogether edentulous. This tool resembles in form the ordinary callipers used by fitters at their lathes, but on the extremities Mr. Kirby has rivetted two triangular and movable pieces of metal, nearly an inch long. When Mr. Kirby's callipers are opened, these triangular pieces of metal can be moved in such a way, that if one foot of the callipers is placed on the centre line running through the upper and lower incisor teeth, the other foot can be brought parallel to the side of the model, and bite, when the dentures are articulated, and the proposed places for the insertion of the swivels thus be tested. One or two experiments with this clever tool will convince anybody who is not violently prejudiced in favour of rule-of-thumb methods, that considerable error may arise in obtaining a true parallel position for the swivels by trusting to the eye alone, or to measurements with compasses from given points. The dentist can also verify, by opening the callipers wide enough, the parallel position of each pair of swivels as contrasted with each other on the triangular foot-pieces, at the end of the callipers, as well as by reference to the centre line of the mouth. I feel personally most grateful to Mr. Amos Kirby for the generous way in which he permitted me to make copies of a tool that has enabled me to conquer some cases of considerable difficulty in securing the correct positions for the swivels in upper and lower

dentures. Mr. Kirby, like all inventors, does not value this clever solution of a mechanical problem as highly as those who have felt the want of it, but were unable to master the difficulty by any other method than the patient trying of angles and points, with the aid of the dividers. A wooden box, to keep modelling wax free from dust, and of a convenient size to stand behind the middle lathe, is the only other convenience we have to speak of in this part of the bench before proceeding to discuss the grinding-lathes.

Between the wax-benches and on each side of them, come the grinding lathes; the most important tools we have to speak about. With the aid of corundum wheels carried on the mandrils of the lathe-head, and some clean water, we can rapidly change the form of hard porcelain by grinding. Expertness in the use of this machine tool is an essential quality to the dental workman, and in order that the laborious hours may produce efficient work, the grinding-lathe should be placed in a good light and have every needful convenience placed within reach of the workman, to carry out, without delay, the details of fitting and mounting porcelain teeth. The lathe-head should be of some simple but effective pattern, able to carry from two to three different sized corundum wheels, and should be driven by a heavy but easily moved fly-wheel with the crank and treadles, set so as to admit of the lathe being driven in the right direction, from the moment the foot presses upon the treadle. The grinding-lathes in my workroom are driven by heavy fly-wheels mounted on cast-iron standards somewhat in shape of the letter Y. These standards were modelled and designed by my late assistant, Mr. A. J. Watts, now Curator of the Mechanical Appliance Department, Leicester Square, London. The arms of the Y terminate in feet which stand on the floor. At each extremity of this standard where it rests on the floor, and where it supports the bench, suitable holes are cast through which screws can be driven so as to securely fix this standard in the position it is intended to occupy. The tail of the Y supports the fly-wheel between the bench and the floor. The fly-wheels revolve on spindles which are turned to fit them, and are firmly bolted in a socket, a little above and passing through the bifurcation of the standard with the aid of a nut and washer.

The treadle and cranks are on the right hand side of the workman, and are set, as we have already mentioned, so as to be always ready for work, the instant the foot is placed on them they set the fly-wheel in motion. The water supply to a grinding-lathe, as we usually see it, is not as good as it should be. A small vessel holds some water which is conducted to the grinding-wheel by means of a slender spout, sometimes with a tap at the end, sometimes a sponge, sometimes some cotton wick, sometimes a brush ; in the press of work, this small water reservoir is replenished again and again from the dish or trough, that receives the drip from the wheel. This water becomes turbid and muddy from the detritus worn off the wheel, and ground off the tooth, and much valuable time is lost, and good corundum wheels are spoiled in workrooms all over the kingdom, from the lack of a little practical ingenuity to supply clean water in drops to the revolving corundum wheels. This may appear a trifling matter to dwell upon, but if an effective method of conducting clean water to the periphery of the corundum wheels, without splashing the workman, while at the same time the worn surface of the wheel is thoroughly cleansed by the constant drip of fresh water be chosen, a standing inconvenience, amounting to a permanent annoyance, will be removed, and fitting or grinding teeth will take its proper place, as a skilful and workman-like procedure. The method of water supply I have fitted to my grinding-lathe is the result of many years experiment, and can be depended upon instead of the dirty and inconvenient method just described. A copper vessel holding about two gallons of water is fixed upon a bracket three feet above the bench, and is filled by a pipe leading from the town supply of water and controlled by a tap. From the bottom of the vessel the water is conducted through small brass tubing over the corundum wheels of each lathe. The brass tubing terminates in small stop-cocks, one over each corundum wheel. To the branches of brass tubing, or to a rod of brass running along the back of the lead trough made to receive the drippings, pieces of thick harness leather are hung in such a way as to receive the clean water as it drips from the little tap, and conduct it to the periphery of the wheel to a spot a little in advance of its diameter, in the direction in which the wheel revolves. Water thus led to the cutting edge of the wheel by means of the tongue of leather in the method described, does not splash the workman, and it is no longer necessary to endure the wet apron or sodden fingers from the clumsy method so often used. Clean water is always dripping on the wheels, cleaning their surfaces, and the porcelain is ground with a speed and sharpness of cut, that all good workmen will appreciate. The water dropping from the corundum wheels is received in a lead pan which is bent in such a way as to lead the water to one corner for escape, through a piece of brass tube which is soldered here. This brass tube is connected with a piece of pipe that passes through the wall underneath the window, into a spout which communicates with a tank, in which are collected the washings from the basins as well as the grindings from the lathes.



Once a year the fluid contents of the tank, into which all the waste water flows, are drawn off by means of a syphon made from lead pipe, and the detritus at the bottom of the tank is removed and mixed with the floor sweep, which can be sent to the refiner when dry.

Lead has been used for receiving the water drip, as being a cheap metal, not very easily oxidised, and superior in every way to the zinc or japanned block tin, and tinned iron vessels too commonly supplied with grinding-lathes. This leaden surface catches most of the rich grindings of gold or platinum too frequently thrown away by careless workmen as of no value, and also catches a tooth struck out of the fingers, when carelessly held to the corundum wheel, thus permitting its recovery by the workman, without the trouble of fishing for it at the muddy bottom of a deep vessel with or without divisions. The illustrations will afford enquirers all the particulars they need about fitting similar conveniences to their grinding-lathes, and I hope all who adopt this convenient method, and find from experience what a saving of time and increase of efficiency can be gained by its use, will recommend it to others.

On the right hand side of each grinding-lathe is hung a piece of soft rag, or well washed calico, about $\frac{3}{4}$ yard long by $\frac{1}{2}$ yard wide, as seen in the illustration, which is used by the workman for wiping his wetted fingers, and the porcelain tooth, during the process of grinding, instead of using his apron and wetting it. This will be found a very great convenience ; the pieces of cloth are always to hand and quickly dry, and when they get ragged and soiled and unable to discharge their duty, they can be replaced with fresh material at a trifling cost, while the tattered pieces can be burned and the ashes thrown into the sweep. Particles of precious metal that are wiped from the workman's fingers do not thus become absolute waste, and are largely recovered through the aid of the refiner.

On the nose of the right hand mandril of the grinding-lathes, I have been able to place small button wheels for fine fitting. These small wheels are usually fitted on the end of the mandril by means of a screw, with a nick in its head for the use of the screw driver, for the purpose of screwing it into the mandril, and not unfrequently burst the wheel. Another method is to turn down the end of the mandril small enough to take these wheels, which can then be mounted with the aid of some sealing-wax or shellac. This method does not admit of rapid change of form in the grinding-wheel, and to this end I have substituted pieces of brass tube about an inch long, which fit the end of the mandril. Into each of these pieces is soldered a thick piece of brass wire, which has been previously straightened, and projects about a quarter of an inch from the brass tube. These pieces of tube can be chucked in a turning lathe and trued, the pieces of brass wire being reduced to a suitable thickness to pass into the button wheels, care being taken to leave a shoulder for the wheel to rest against, *i.e.*, the projecting brass wire is only reduced in diameter to such a length as will clear the thickness of the corundum wheel. These pieces of tube with the projecting wire, after being trued on the lathe are tried on the end of the mandril and should fit sufficiently tightly to resist friction without movement on the mandril. Suitable corundum button wheels or nipples can be cemented to these pieces of brass tube to be ready for use. Tube teeth can be quickly fine fitted by having a choice of several small wheels in addition to the large ones. These little brass tubes carrying small corundum wheels can be pushed on and off the end of the mandril with the finger and thumb, and can be kept in a small mahogany rack at the back of the piece of lead which intercepts the splashes from the back of the grinding wheel. Hanging at the end of the mahogany hand-rest is a little metal box about 1½ inch in diameter and 1½ inch deep, in which can be kept pieces of sticking-wax used to attach teeth to plates. The paint-pot for holding rose-pink or vermilion with a little oil or vaseline should have its position as figured in the illustration, as it is always to hand and at the same time out of the way. I have figured the pattern which has been in use for many years with a camel's hair pencil laid across it. The illustration, p. 105, shews the construction of this convenient little paint-pot so clearly that a few words of description will suffice. It is a shallow tray made of German silver, of dimensions to suit the ideas of the dentist. Two metal strips are placed edge ways across the shallow box, and another strip of metal of equal depth is bent into the form of a ring. These are all soldered carefully to the bottom and sides of the tray which is then filed up. A loose metal cover hinged to the back is useful to prevent dust falling into the box when the paint-pot is not in use. The circular space is intended to hold the paint, three rows of grooves as seen in the diagram cut in the edges of the box and in the partitions form resting-places for the paint-brush, and prevent it rolling off. A shallow metal box constructed in this way, not only holds the paint ready for use, but affords a sufficiently large surface on which to drop the paint-brush without unnecessarily smearing the work-bench or the lathe. This paint-pot can be quickly cleaned by making it red-hot, as it is constructed with hard solder.

GOLD CROWNS WITH PORCELAIN FACINGS.

By William M. Gabriel, M.R.C.S. and L.D.S., Eng.

In the February number of this journal in a paper on "The Application of Gold Crowns," or rather at the end of the discussion which followed, the reader is reported to have said as follows: "I should of course have mentioned that in the case of an all-gold crown, the pin is fixed into the root first and the crown adjusted afterwards, and that in cases where a porcelain front is fixed, the pin having been previously soldered to the top of the cap, the whole is cemented into the root."

Believing this to be the generally accepted rule, I propose to describe a method by which it is comparatively easy to attach a faced crown to a root, the post having been previously fixed in the latter.

I believe this plan (which I learned from the late Dr. J. P. Grout, of New York, and which I have never seen mentioned in print) to be a particularly valuable one, when for instance it is desired to crown a first bicuspid root, decayed far below the gum on its mesial, or distal aspect.

In such a case it is extremely difficult if not impossible to accurately shape the root and fit a collar unless the missing part of the stump below the gum has been restored with amalgam, and if this has to be done, it can be far more easily accomplished if the pin is already fixed, and can be made to assist in supporting the amalgam.

Supposing the post to have been fixed as far towards the palatal side of the root as possible, amalgam can be built up round it where the root is deficient. When this has set, it can be trimmed up, and the collar fitted, contoured, and cut down to the bite.

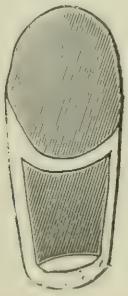


Fig. 1.

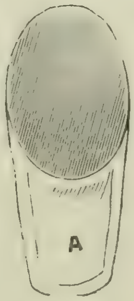


Fig. 2.

This having been done, it is ready to have the previously backed facing attached, and this is the point to which I wish to direct attention.

Instead of cutting out a somewhat rectangular portion of the collar as is usually done, (see fig. 1) the collar is cut on three sides only of the rectangle (see fig. 2) and the piece of metal thus released pushed back, the free end being towards the stump edge of the collar.

The facing is now carefully fitted, the portion of the collar A being bent to accommodate it, and so as to be close against the backing.

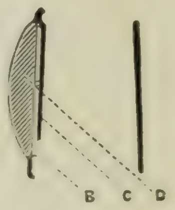


FIG. 3.

These are next waxed together, tried in the mouth to make sure all is correct, then invested and soldered (fig. 3 shows the arrangement in section ; D being the facing). It will be found easy to make the solder flow between the backing B and the metal covering it, C, and on to the sides of the collar, if the intervening spaces are filled up with gold scrap. The crown can be then finished in the usual manner.

DISLOCATIONS—FRACTURES OF THE JAW.*

BY MR. H. S. PRIDEAUX.

MR. PRESIDENT AND GENTLEMEN,

THE subject of this paper that I am going to read to you to-night on "Dislocations and Fractures of the Jaw," I shall divide into two parts, viz :—

(1.) Dislocations of the jaw.
(2.) Fractures of the jaw.

Dislocation of the jaw is an accident which does not often come under the notice of the dental surgeon, as it is an occurrence which is generally treated by a general practitioner, but there are times when the dental surgeon's skill is called in, as occasionally the jaw is dislocated by the extraction of a tooth, or during the process of taking an impression, and at such times it would be far more credit to the dentist to reduce the dislocation rather than to have to call in a general practitioner.

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* A Paper read before the Students' Society, London Dental Hospital.

As a rule, dislocations of the jaw are fairly easy to reduce at the time of the dislocation, but if they are left for some days or even hours, they will be much more difficult to reduce.

There are four forms of dislocation of the jaw, viz :—

(1.) Complete dislocation.
(2.) Incomplete dislocation.
(3.) Bilateral dislocation.
(4.) Unilateral dislocation.

In complete dislocation of the jaw, one or both of the condyles have slipped out of the glenoid fossæ, and rest right in front of the articulating surfaces of the superior maxillæ.

In incomplete dislocation, the condyles have not slipped out altogether from the glenoid fossæ, but rest on the inter-articulating cartilages.

In bilateral dislocation, both condyles are resting on the inter-articular cartilages, or right outside and in front of the articulating eminence.

In unilateral dislocation, only one condyle is resting on the inter-articular cartilage, or right outside and in front of the articulating eminence, and the other condyle is in its normal position.

To diagnose a dislocated jaw is a very simple matter, and if once seen will never be forgotten.

The first thing you will probably notice is that the mouth is widely open, and that the lower jaw is thrown very much forward, which gives the patient a very idictic appearance. There is also inability to close the mouth, the centre of the jaw may point directly forward, showing that the patient has a bilateral dislocation, or if the centre of the jaw points either to the right or left, you may be pretty sure that there is a unilateral dislocation.

The causes by which the jaw may be dislocated are many, it may be from laughing very heartily, yawning, or in eating by opening the mouth too widely, or from violence (which is generally direct), such as a sudden blow, or by having a tooth extracted.

People who are of a delicate constitution stand a much greater risk of having the jaw dislocated, as the muscles are not nearly so strong as in a healthy and well developed person, and also women are much more liable to dislocation than men.

The treatment of dislocations of the jaw are fairly simple, excepting where the jaw has been dislocated for some time, and has become rather rigid on account of the contraction of the muscles caused by the accident.

The first method I shall mention for reducing the dislocation is, place the patient on a firm low stool or chair, then to stand behind the patient, having previously well padded the thumbs by wrapping them in lint to prevent having them bitten, then place them on the lower molar teeth, with the patient's head firmly resting against your body, you must now press downwards with considerable pressure until you can feel that you have the condyles below the articulating surfaces of the superior maxillæ, then press a little backwards, and in all probability the condyles will slip back into their normal position, and as they slip into the glenoid fossæ the jaws will be brought together with considerable force, and the thumbs would have probably been badly bitten if you had not taken the precaution to pad them well at the beginning of the operation.

If you fail to get sufficient force in this manner to reduce the dislocation, you should get an assistant to stand behind the patient so as to keep the head rigid, then standing in front of the patient, and go through the same operation as when standing behind the patient, you will most likely reduce the dislocation, as you have much more power standing in front.

If you should fail to reduce the dislocation by these methods, you will have to resort to the use of a lever, which should be about a foot in length and half-an-inch square.

Then by placing one end of the lever on the molar teeth of the dislocated side, and by using the molar teeth of the superior maxilla on the opposite side to the dislocation for the fulcrum, raise the other end held in the hand, then, when you think the inferior maxilla is sufficiently depressed, with the other hand press back the chin, and the condyle will slip into its socket.

If the dislocation is bilateral, you will have to go through the same operation on the opposite side of the mouth.

Always after a dislocation the patient should wear a four-tailed bandage, made partly of elastic, so as to allow the jaw to be used, and at the same time to be a support as well.

After a jaw has once been dislocated, it is always liable to occur again, and patients should always be warned to be very careful not to overstrain it.

FRACTURES OF THE JAWS.

Fractures of the jaws, like all other bones, can be simple and compound.

A simple fracture is where the bone is broken with a clean fracture, without other injury to the bone or surrounding parts.

A complicated fracture is where the bone is broken in more than one place, and other complications, such as external injuries, injury to vessels, nerves, teeth, and the surrounding tissues.

The inferior maxilla is much more liable to fracture than the superior, the fractures being generally caused by direct violence, such as a blow, fall, or the extraction of a tooth, &c.

The body of the jaw is much more the seat of fractures than the neck or rami of the inferior maxilla, as a blow received on the neck or ramus more often dislocates than fractures it.

The commonest place for the inferior maxilla to be fractured is in the region of the canine tooth.

A fracture of the inferior maxilla is generally compound, there being an opening on the lingual surface of the gum, caused by the rough end of the fractured bones projecting through the mucous membrane, which is not very thick, as a great part of the internal surface of the inferior maxilla is subcutaneous.

The symptoms of fractures in the maxillæ are generally fairly easy to diagnose on account of the mobility of the fractured parts by crepitation, and the irregularity in the line and bite of the teeth.

Fractures of the inferior maxilla in men are much more frequent than in women on account of the greater risk of accident in daily work. The proportion is about ten to one.

Fractures of the superior maxilla are far less frequent than the inferior and the line of fracture does not, as a rule, take any definite position, but is generally very irregular.

There is not, as a rule, much hæmorrhage in fracture of the inferior maxilla, but fracture of the superior maxilla the hæmorrhage is much greater, on account of tearing of the mucous membrane of the many plates of bone which go to make it up.

Fractures of the alveolar border very often cause the teeth to loosen, and on no account should they be extracted at the time of injury.

TREATMENT :—If the superior maxilla is badly crushed it is not wise to meddle with it for a little time, so as to allow the inflammation to snbside and the parts begin to heal, you will then be able to gradually bring the bones into apposition by carefully moulding the parts with the hand, you may perhaps have to use a splint but it is not always needed.

Be very careful never to remove any loose bits of bone or gum, as the power of the parts to heal and unite properly is very great on account of the good blood supply, if the teeth are very loose they may be held in position by a wire splint.

Even if the case looks almost hopeless it is surprising what a great change takes place in a few days.

One case I remember where a man was struck with great force in the region of the six upper front teeth, which caused a fracture in the line of junction of the two superior maxillæ, and there was a space between the two central incisors which looked very much as if a tooth had been extracted.

A model was taken, and after it had been sawn in two (where the fracture had taken place), the parts were brought together and a splint made to fit, this was placed in the mouth while the parts were pressed together, it was then wired to the teeth and the patient quickly recovered.

Care should be taken never to use the elevator for extracting an upper molar tooth, as you are almost bound to fracture the process in so doing.

For a simple fracture of the inferior maxilla take a piece of gutta-percha, about 6 inches long and 3 inches wide, and cut the narrow ends for about an inch and a half from the ends towards the centre, then place it in warm water until it is fairly soft, and adjust it to the chin making a kind of cup for it to rest in, having set the fracture, proceed to keep the gutta-percha in position by means of a four-tailed bandage which is made by taking a piece of ordinary bandage about 2 inches wide and a yard long, it is then folded into two, a small slit is now cut in it about 2 inches long, and each end is torn down within about 2 inches of the slit, by so doing the four tails are made, you then stand behind the patient and let the chin rest in the slit, next take the two upper tails bringing them backward along the inferior maxilla and fix the ends behind the neck, the other two tails you bring upwards to the crown of the head, and fix them about the centre of the frontal bone, finish by tying the remaining ends of the frontal to the ends of the lower bandage, thus keeping the splint in a firm position.

In setting to work to repair a fracture you should be very careful to examine the mouth very carefully at first, and to see that no teeth have been knocked out and have slipped down between the fractured parts, if such be the case the offending tooth should be removed. The next part of the operation is to take the model very carefully (in all cases be specially careful to handle your patient as gently as possible, as the pain attending a fractured jaw is very great), one of the best materials to take the model is with gutta-percha as it is much more springy and does not get so hard in the mouth as "Stent," and in removing it from the mouth it comes away much easier, and also the pain to the patient is much less.

A model of both the upper and under jaw should always be taken, and when you have the plaster cast ready, cut the model at the point of fracture, and as near as you can repair the model, making the bite articulate as near as possible with the model of the opposite jaw, a splint is made to hold the parts in position until they heal, there are three splints which are commonly used which I shall now describe, they are Gunning's, Kingsley's, and Hammond's splints.

The Gunning splint is practically two splints joined together, the way in which it is constructed is by making two ordinary splints and joining them together in the molar region, propping the bite sufficiently to allow a space to be left open in the front of the mouth, through which food may be given, and the mouth syringed out with disinfectants so as to keep it free from septic matter, which is an operation that should be well looked after, as the splint has to be worn for a considerable time, there should also be holes drilled in the vulcanite round about the necks of the teeth to allow any suppurating matter to exude through which may be washed away by syringing.

A modification of this splint can be used by simply making a splint for the fractured jaw and not capping the opposing teeth, but by letting them bite into blocks of vulcanite which prop the bite but do not cover up the teeth entirely, this is Mr. W. Hern's method, which he says answers very well and is not nearly so clumsy as the ordinary splint, therefore it can be put in and out of the mouth with comparative ease, whereas the ordinary splint is a rather large apparatus and is difficult to get in and out of the mouth.

Kingsley's splint is made by capping the teeth in the ordinary way, and fixing a piece of thick wire along the side of the splint from the sides of the molars and bicuspids out between the lips, and then bending it back along the cheek towards and on a level with the bottom of the ear, then by fixing a bandage to one wire and carrying it under the chin and catching it in the wire of the opposite side (having previously placed a pad of wool or lint under the chin to prevent galling), bringing it back again and catching it in the wire where the bandage commenced, having done this two or three times fix the bandage and the operation is finished.

The next splint that I shall describe is the Hammond splint and which is generally considered the best, it is made of wire which may be gold, silver, or tinned iron, the last of which is the preferable. When you have the model ready, bend the wire as near as possible to the arch of the teeth so as to make a loop of wire going all round the teeth, starting say from the buccal side of the molars and coming in front of the incisors and on towards the molars, being then brought right round the posterior wall of the last molar all along the inside of the teeth, to meet the wire at the starting point, the ends should be then soldered together and if any of the teeth are missing cross pieces from the outer to the inner wire should be soldered to strengthen the splint, the next thing to do is to place the splint into position, and by passing fine binding wire between the necks of the molar teeth catching the inside wire of the splint, then bringing the binding wire round the tooth the two ends should be twisted to hold the splint in position, these sutures are placed one on each of the first molars, first bicuspids and laterals, or any tooth that may seem fit; if any of these teeth be missing, the jaw should be set; you next twist up the ends of the binding wires as tightly as possible and bend the ends of the wire along the gum margin so as not to irritate the cheek or lips.

These three splints are the general ones in use.

If at any time you are called upon to treat a fracture that has been neglected, and where a lot of the bone has been lost, the jaw become "V" shaped and the articulation practically gone, you should try to expand the jaw to its normal position and replace the lost bone and teeth by an artificial denture.

Such a case I saw treated about four years ago.

The patient was a labouring man, who, as he was driving fell out of the cart and fractured his lower jaw very badly, all the lower front teeth, excepting one of the canines, were either knocked out or had to be removed, the bone also necrosed and came away, he was treated in a general hospital for a few months and sent out as cured, having the bicuspid on one side of the mouth almost meeting the canine on the opposite side.

When I saw him he had practically no biting power whatever, and only lived on soft food, etc.

He was then placed under a dental surgeon, who taking a model, a vulcanite splint was made, at the same time capping the remaining teeth, the splint was then cut in two between the bicuspid on one side and the canine on the other ; in this situation a wedge of compressed wood was fixed which gradually expanded the arch, the wood had to be renewed every few days until there was room to get a jack-screw in position, a new case was then made with a jack-screw inserted and after a month or so the jaw was expanded sufficiently, after having worn the splint for some time and being able to masticate fairly well on it, he had an artificial denture made to fill up the space, and can now eat as well as if nothing had happened. I saw him a few months ago, and he told me that if he leaves the case out of the mouth for a few hours or a night, he has great difficulty in getting the case back again, as the union only being fibrous there is always a great tendency of the parts to close, and on one occasion he lost his plate for just over a day, and being unable by himself to place it in its proper position, applied to the dentist, who not without considerable trouble readjusted the splint.

In conclusion, I must thank you all very much for listening to my paper, hoping you will overlook any deficiencies on my part in attempting to write a paper on so large a subject. I have also to thank Mr. W. Hern very much for all the specimens he has been kind enough to lend me to pass round for your inspection.

TWO COLLATERAL CASES.

By J. D. Ross Watt, L.R.C.S., L.R.C.P., L.D.S.

I have to bring before you the facts of two cases, which occurred under my notice lately, of irritation produced by the presence of a foreign body, the first case occurring in a patient, in the second instance, curiously enough the subject is a calf. It will be observed how analogous are the two cases, as they present themselves.

Case I.

Mr. —— presented himself complaining of pain attendant upon and referred to the left lower wisdom tooth. The teeth are examined but nothing is visible to explain the symptoms present which are pain, tenderness, and slight swelling and redness, though thought to be of a neurotic nature. Next day patient again seeks another consultation, and on examination for a second time, the gum on the posterior surface of the wisdom is noticed to be inflamed, tender to pressure and slightly indurated. On further inspection there is found between the tooth itself and the gum, a bristle of a tooth brush, which has insinuated itself here. This is withdrawn, relief is obtained and symptoms subside and matters are explained. Showing us how careful should we be in our methods of examination. The time which elapsed from the commencement of the pain, felt to the time when the bristle is removed is one week.

CASE II.

Side by side with the above I place the following. Mr. —— butcher, has a calf which he takes before the veterinary surgeon, seeking explanation about a peculiar swelling situated about the region of the mouth and jaws, in consequence of which the animal though apparently in good health refuses to partake of food. The matter is unexplainable. The butcher having the above history is rather chary of selling the head of the animal (which are used to make a preparation known as potted head). However on the head being cut up and dissected, attention is turned to the jaw and mouth and there is found on the buccal side of a right upper tooth, a piece of straw which measures on being withdrawn, 1½ inches in length

There is also a considerable amount of swelling and induration present, and a slight amount of pus can be made to exude on pressure being applied to the gum round the tooth. From the above history the discomfort of the animal can easily be accounted for.

REVIEW.

SOME POINTS IN THE STRUCTURE AND DEVELOPMENT OF DENTINE. By J. Howard Mummery, M.R.C.S., L.D S. *Communicated by C. Tomes, F.R.S. Philosophical Transactions of Royal Society*, (*London* 1891).

THIS paper which now appears in the Philosophical Transactions of the Royal Society, not only proves a refreshing sight from a dental practitioner's aspect, but the matters treated of and the manner in which the points are dealt with must be most acceptable from the scientific and histological point of view. The occasions upon which work of this kind (carried out by a busy dental surgeon during his leisure moments) can demand what may be called the "Royal" assent are too few and far between to allow such an opportunity to pass without due acknowledgment in our pages.

And indeed it becomes evident that his fellow practitioners must owe a debt of gratitude to one who throws additional light upon the structure of those tissues with which their daily work is so largely concerned. It is perhaps the habit of some to regard the field of dental surgery as so small and played out that there remains but little room for additional investigation ; a few others may be of opinion that what we already know is so sure that there is nothing further to be said, whilst others still, in the cry for something "practical" sometimes display not only a forgetfulness of the paths by which they have been enabled to attain their present powers, but also an ignorance as to the only true way of increasing them. This frame of mind is, happily, not that of the majority and most will welcome any advance upon our present knowledge, if the work has been carried out in the true scientific spirit, free from arbitrary statements, and with an open mind not wedded to any autocratic ideas.

In the paper under consideration we have the results of some excellent work in connection with the histology of a most difficult tissue. It has been known to those interested in such matters that Mr. Mummery had been for some time past carrying out an extended investigation, and collecting new facts, in connection with the formation and structure of dentine. By means of a new method by which a view can be obtained of hard and soft tissues *in situ* without the use of acids he has been able to compare large numbers of sections, some of them taken from other of the vertebrates than man. His interpretation of what he has found may be summed up briefly as follows. Bundles of connective tissue fibres run from the pulp into the dentine, between the odontoblasts and form a basis for the hard tissue. There is also good ground for thinking that there is a laminar arrangement, for in young dentine there is a faint striation parallel to the surface of the pulp, and although this appearance is limited to a narrow area near the pulp, the results of decalcification by acids and the action of caries tend to show that the lamellœ are in some way present in the completed tissue. Amongst other points of interest dealt with is a reference to the incisors of the rat, which, as is well known grow from persistent pulps. It has generally been held that the dentinal fibrils of the abraded surface were cut off from an sentient pulp by the formation of a laminated granular mass, but Mr. Mummery finds that the tubules on the worn surface are still in connection with the pulp tissue as the latter contains odontoblasts as far forward as it extends. If the fibril, then, is to be held accountable for the sensitiveness of dentine we may imagine that the rodents, and other animals with worn teeth in a like condition, do not have a very happy time, but perhaps Mr. Mummery will be able later on to suggest an alternative explanation of "sensitive dentine."

Perhaps the following quotation sums up the principal position assumed :—"We can no longer look upon the matrix of dentine as being a homogeneous substance, but must regard it as composed of a reticulum of fine fibres of connective tissue modified by calcification. The writer suggest the term "odontogenic fibres," from their resemblance to the osteogenic fibres in bone, although he points out that the fibres themselves are the scaffolding upon which the hard tissue is built up, rather than the actual forming material. Under these circumstances the odontoblast is analogous with the osteoblast, and, in accepting the "secretion" theory instead of the "conversion view, we must regard the fibril in the same light as we do the contents of the canaliculi in bone. These latter have not, so far as we know, been entrusted with the function of sensation, and the tendinal fibril having been forced in the past to assume some such role for the dentine, seems likely to be deposed.

It is understood that Mr. Mummery is at work now upon the nerves of the pulp, and we can only hope that his efforts will be rewarded, and that in the fulness of time we may have the pleasure of perusing another paper in the Philosophical Transactions perhaps even more interesting and important than the present.

We must express our great admiration of the splendid plates accompanying the paper. There are altogether twenty-three well executed, tinted figures, which have been copied from original drawings, all of them, we believe, from Mr. Mummery's pencil. Those of our readers who were present at the last meeting of the Odontological Society will have seen some of the original specimens.

APPOINTMENTS.

Mr. David Monroe, L.D.S.,Ed., Assistant Dental Surgeon, Edinburgh Dental Hospital, has been appointed Hon. Dental Surgeon to the Edinburgh Original Industrial School.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The Ordinary Monthly Meeting was held on February 1st. Mr. J. H. Mummery, M.R.C.S., L.D.S. the President, occupied the chair, and was supported by a large attendance of members and several visitors.

Mr. Christopher Heath, F.R.C.S. was unanimously elected an honorary member of the Society. Messrs. Wheatley, Woolf, Percy Smith, Edgelow, Drs. Harris and Roughton were elected resident members, and Mr. Cooksey of Worthing and Mr. W. Amoore of Edinburgh and Mr. Palethorpe of Birmingham as non-resident members.

Mr. Oswald Fergus of Glasgow presented a specimen to the museum of a left upper lateral root on which a tube tooth had been crowned in 1840. The tooth of the opposite side contained a gold filling 60 years old. The Curator showed the specimen.

A casual communication was given by Mr. C. S. Tomes, F.R.S., the specimen, sections of which, were shown and photographs of them thrown upon the screen, was of considerable interest. It was a tooth picked up in an old churchyard in Warwickshire and of great age. It had evidently worked to the surface as the ground had been dug up. The sections showed that its structure had been drilled in every direction in the most curious way, and the drill holes were apparently the work of an organism. It had been usually believed that the micro-organisms were capable only of drilling the dentine by setting up fermentation, and the acid so formed was supposed to act as a solvent. However, in the case of this tooth, the micro-organism, possibly a mould, as suggested by Mr. Mummery who had examined the sections, had been able to drill holes out of the mouth and without any fermentation process co-existing. The tunnelling seen ran not only along the lines of the dentinal tubules, but along the incremental lines and further across the tubules in all directions, showing that they were able to traverse the planes of greater as well as lesser resistance. There were seen also various excavations occupied apparently by spore masses. The specimen was certainly interesting as showing there was evidently more than one method by which excavation could occur. The situations in which the excavation occurred were not those in which caries was most commonly found.

Mr. MUMMERY then delivered his Inaugural Address.

After having acknowledged the honour conferred upon him by his elevation to the Presidential Chair, Mr. Mummery said that while in no way depreciating "Casual Communications," he thought that well considered papers on some subject which the contributor had made specially his own were of great value. Papers too from those *outside* their own speciality, though they ought not to take precedence of *members'* communications, nevertheless served a very useful purpose in tending to prevent a narrowness of ideas which they were otherwise likely to fall into. It would be acknowledged that it was highly important for the Dental profession to keep up as wide an interest as possible in other branches of surgery and medicine, and kindred subjects. It would be well to bear in mind Professor Huxley's observation that "A man who works away at one corner of nature, shutting his eyes to all the rest, diminishes his chance of seeing what is to be seen in that corner." Mr. Mummery thought that there was sometimes a tendency to separate the so-called "practical" from the "scientific," and this he regarded as a mistake. If empiricism were to be avoided, science and practice must go hand in hand. Investigation in their own speciality might sometimes seem to be well nigh exhausted, but the President believed that would only arise from taking too superficial a view of the case. He was so greatly impressed by some remarks in the opening address of one of their former presidents, Mr. Charles Tomes, in this connection—that he ventured to quote them—"In the pursuit of every branch of knowledge there comes a time when that which lies upon the surface patent to casual intelligent observation has been worked out, and for further progress a closer and deeper investigation becomes essential. I venture to think that if that closer investigation, with the aid of modern methods of research were applied to our special problems, a sufficiently rich harvest of results would reward the effort." Mr. Mummery would urge a little indulgence in the unfashionable sin "enthusiasm" with the assurance, that it would result in satisfaction and pleasure to those who practised it, and the advancement of the profession as a whole. Let them not grow too old to learn, but be ever ready to correct their knowledge by the light of continually advancing science. The late Mr. James Hinton, still better known perhaps as a philosopher than a surgeon, said "Nature is ever misunderstood at first and most by those who most earnestly study her. Did she not show as plainly as it was possible, the fact of the earth going round the sun, and did we not choose to think that she meant the sun went round the earth? We could not help it, and she has had most pathetic patience with us, she has only said 'look again' see this fact, how can it be as you think? And when we put that wrong also she has said again, 'look here.' Fact after fact she has tenderly laid before us, until at last we could but see it as she means it."

Mr. Mummery continuing hoped it would not be regarded as too great an innovation if he departed somewhat from custom in his address and confined himself more particularly to the subject which had absorbed much of his attention of late years, namely, the structure and developmental relations of Dentine. His views, as they would be aware, on the subject of dentine had already been published in the Philosophical Transactions of the Royal Society for 1891, and he proposed that evening to dwell shortly upon the evidence in support of these views and on the relations of dentine to the other tissues of the body. In defending himself against the possibility of the accusation of being wedded to any theory, he would quote the support of Mr. Hinton already referred to, and of Darwin, "that without the making of theories there would be no observation." Thus it seemed that theory—a very dangerous thing wrongly used—was a desirable and necessary adjunct to any investigation taken up on broad lines, being the scaffolding on which the edifice is reared. The theory might be only partially right, but rightly used might lead to true results.

Before proceeding to the special subject of Dentine he desired to remind them of the views of bone structure and developement at present held. The investigations of Professor Sharpey showed clearly that bone is made up of lamellæ, consisting of transparent fibres "decussating with each other in the form of an exceedingly fine network." These transparent fibres rendered visible after decalcification of the bone with acids were according to the recent researches of Professor V. Ebner, made up of finer fibres corresponding in character with bundles of white connective tissue fibres. Treating first of intramembranous ossification as exemplified in the bones of the cranium, if the parietal bone were examined when ossification had already commenced it would be found a mass of bone in the centre, and spicules radiating from it in all directions. These bony radiating spicules would be seen under a microscope to be continuous with bundles of fibres, the osteogenic fibres, extending beyond the circumference of the formed bone. These osteogenic fibres were identical in chemical composition with white connective tissue fibres, and had been described by Gegenbauer as in some situations directly continuous with connective tissue fibres. They were covered with large granular corpuscles, which also filled up the interstices between them. In the last edition of Quain's Anatomy, Professor Schäfer had said : " The earthy deposit occasionally appears in an isolated patch here and there on some of the osteogenic fibres in advance of the main area of ossification ; Professor V. Ebner considers that the fibres composing these prolongations are not themselves calcified, the uniting substance only being impregnated with lime salts. It would be seen then that in this form of bone development, bundles of fibres, clothed with cells, project from the surface of the already completely calcified tissue. On the long bones, where the chief addition to their substance takes place, beneath the attached periosteum on the outer surface of the bone an arrangement of tissue elements in many respects similar are seen. Applied to the surface of the bone is a very distinct layer of large granular corpuscles, the osteoblasts. These cells are in direct contact with the bone, and occupy the intervals between bundles of fibres of the periosteum which pass deeply into the osseous substance. The arrangement of the fibres in bundles is here very marked, and also their continuity with the connective tissue fibres forming the periosteal membrane. In the peridental membrane similar appearances are met with bundles of fibres from the pericementum enter the cement and persist as the penetrating fibres of Sharpey in that tissue, and occupying the intervals between the bundles we find cells, the osteoblasts and cementoblasts. Some considered that the osteoblasts are directly converted into bone, some cells escaping calcification, as the lacunal cells which become surrounded by the consolidated osteoblasts forming the matrix of the bone. According to other authorities the osteoblasts elaborate the osteogenic substance, not being themselves converted into bone. If it s the case that the protoplasm of the cell is directly converted into bone, as pointed out by Prof. Schäfer and others, the outline of the cell areas in the completed tissue ought to be seen, but this cannot be demonstrated, nor can an osteoblast be seen partly converted into bony substance, but if the conversion be correct, surely such cells should be met with.

Directing attention now to dentine, it would be found that it has been set apart among the tissues of the body as a peculiar substance not formed on the plan of other tissues, but standing alone in its mode of development. Two different theories, as in the case of bone, have been held by leading histologists, which may also be described as the conversion and the secretion theories. According to the former, that familiar to students of Mr. Tomes' "Dental Anatomy," and held by Prof. Waldeyer and others in Germany, the odontoblast cells are converted into the matrix of the dentine, and the sheaths of Neumann by direct calcification of their substance, processes from these cells remaining uncalcified as the dentinal fibril. According to the contrary view, that of secretion, the odontoblasts secrete a substance, which, by calcification becomes, the matrix. This view, with modifications, is held by Prof. Kölliker, Baume, and others. If the odontoblast cell is converted into dentine by actual alteration of its substance, this must take place in three different degrees, very little, if any, change taking place in the fibril, a peculiar condition being brought about in the part of the cell which forms the sheath of Neumann, rendering it peculiarly resistant to the action of acids, and the rest of the cell becoming converted into the hard substance of the matrix.

As the portion towards the already formed dentine is used up the cell maintains its integrity from beneath, so that from the commencement of calcification to its completion, one cell only is engaged in forming the whole depth of the dentinal substance in and around one tubule. A slow diminution of the calibre of the tubule by a gradual process of calcification of the periphery of the fibril is considered to constantly take place during the life of the tooth.

In a contribution to a discussion in "Nature" on Weissmann's theory of heredity, Professor Cleland made use of this view of the persistency of the odontoblast cell as an illustration.

Mr. Mummery could not but think that the odontoblast is a rather hardly used cell ; it has not only had to persist during the whole active life of the tooth, but has had to form the soft fibril, the investing tubule, and the matrix of dentine. The additional function of a nerve ending cell to conduct sensation he thought was hardly consistent with its other offices, and with what was known of the action of cells in other parts of the body. This anomaly struck Mr. Hopewell Smith, in a paper on development, and he would rather consider the function of the odontoblast to be wholly sensory, the cell really being a nerve-end organ and compared by him to the ganglion cells of the spinal cord, other cells than the odontoblasts being concerned in the formation of dentine. In this case, however, the President said, one would expect to find very considerable nerve filaments entering the odontoblasts, and it is also remarkable that in old teeth the odontoblast layer appeared to be absent. Professor Kolliker considered the growth of dentine to be partly by conversion and partly by secretion, that while the central part of the cell persists as the fibril and tubule, the matrix is a secretion from the odontoblasts and other cells of the pulps. Baume holds that the calcification of the dentine takes place in a material secreted by the odontoblasts.

Concerning the relations of the fibril to the pulp, much further investigation was still called for. Professor Klein described the dentinal fibril as arising not from the odontoblast at all, but from a separate layer of deeper cells. With the more perfect means now at our disposal for the examination of dentine in its natural relations to the pulp, it was still very difficult to decide as to the origin of the fibril in mature teeth. Referring to the development of dentine Mr. Mummery said, in examining a longitudinal section of a bicuspid tooth cut by Weil's process and unstained, he saw projecting into the pulp cavity all round the margins, processes like spiculæ. The pulp, though, partially retained, had been torn away in many places from its connection with the dentine. These bundles of fibres—for such they distinctly appeared to be—were evidently continuous with the calcified substance of the dentine on one side and the pulp on the other. The cell layer had fallen away. This specimen seemed so remarkable that he cut and examined many more, and although that was peculiar in the degree of apparent stiffening of the bundles he found that fibres from the pulp passing into the dentine and incorporated with it were very constantly met with.

In stained preparations, where the continuous layer of the odontoblasts was not visible, bundles of fibres were distinctly seen, and in many instances these were crowded with small cells, the nuclei of the odontoblasts being visible in the interspaces between the bundles. This appearance put one very strongly in mind of the osteogenic fibres in membrane bone calcification. If young teeth with incompleted roots were examined, the fine connective tissue fibres were seen passing into the uncalcified portion of the matrix, which was in such teeth proportionally very broad, and the odontoblast cells were seen at the same time forming a very distinct layer, and with separations between them.

Another point shown by these specimens was that a fine striation was visible in the more recently calcified dentine.

Turning his attention to the dentine of other mammalia, the President found in the pulp of the elephant's tusk a very strongly marked connective tissue incorporated with the dentine; and in the incisor tooth of the rat this passage of the connective tissue of the pulp into the dentine was more marked than in any teeth he had examined. Not only could one trace the oblique passage of the fibres into the calcified substance, but in the formed dentine a strongly marked striation parallel with these fibres was very distinct. At the suggestion of Mr. Tomes, Mr. Mummery now turned his attention to fish, and chose as a typical vaso-dentine the teeth of the hake (Merlucius). The strongest confirmation of the conclusion that connective tissue bundles are directly concerned in the process of dentine formation was given by vaso-dentine. He here found a distinct layer of connective tissue fibres or bundles of fibres surrounding the pulp cavity and apparently continuous with the dentine, this layer having been hitherto described as an odontoblast layer by Mr. Tomes. In connection especially with the subject of vaso-dentine, Mr. Mummery desired to acknowledge his great indebtedness to Mr. Charles Tomes.

When these fibres were distinctly visible as a layer, it was very difficult to detect any cells in connection with the dentine, but in other specimens, where the layer was not so marked, rounded cells were seen forming a distinct layer in contact with the dentine, and these cells could be traced into the bone of attachment at the base of the tooth where cells precisely similiar in appearance were in contact with the bone.

In many of Mr. Tomes' specimens the substance of the vaso-dentine was seen to be split up into fine fibres similiar in appearance to those surrounding the pulp and running in the same direction at right angles, curiously, to the very obvious longitudinal striation of vaso-dentine. Mr. Tomes had, in recent investigations, also found an outer layer of the dentine apparently made up of decussating fibres.

Mr. Mummery thought that the evidences before them led to the conclusion that dentine like bone was formed of connective tissue. After referring to the strong evidences of the laminar character of dentine, the President said that if the observations of Professor V. Ebner and his own were corroborated and accepted, dentine would be brought out of its isolated position and classed with the connective tissues.

After some remarks from Mr. C. S. Tomes and Mr. Sidney Spokes, and a brief reply from the President, the meeting closed.

Odonto-Chirurgical Society of Scotland.

DISCUSSION ON MR. EZARD'S PAPER ON COCAINE.

At the last meeting of the above Society held February 11th, Mr. G. W. Watson, L.D.S., in the chair, the subject of cocaine was discussed, Mr. Ezard reading a paper upon its uses (see page 97).

Dr. WILLIAMSON said that, in common with most practitioners, he had experimented a little with cocaine, in extraction, but, on account of the occasional unpleasant effect, time taken for injections and the great general superiority of nitrous oxide, he had given up its use for that purpose, but found it of service for other dental conditions. While complimenting Mr. Ezard on the matter and arrangement of his paper, he thought that the sample cases adduced only served to show that he had not been more successful than many others, and that it was too great an assumption to attribute the fatal cases, which had occurred to such causes as an unclean syringe, or impure drug. There was one important point omitted in the table, and that was whether peridental inflammation existed in any of the cases, as the effect was not so good in such conditions. He had had one case of a boy with severe nausea, in which case immediate relief was obtained by a dose of effervescing citrate of caffeine. It is said that patients so often express a great dislike to being made insensible, hence the advantage of Cocaine, but be believed that, in most cases, the operator, if he chooses, can easily over-rule that objection and administer gas.

Mr. W. M. FISHER thanked Mr. Ezard for his scientifically prepared paper, and said it was a welcome addition to the literature of the subject, in so far that he had tabulated doses from one-fourth of a grain to a four-grain dose, defined the class of patients and shown the results, but withal he could only look on the record, from a professional point of view, as a record of failures, as Mr. Ezard freely admitted that two of his female patients raised the hand nervously over the heart, and afterwards mentioned the flutterings of the heart, then we have his very often quotation, "administered whisky" with his two other cases where he had to resort to Nitrite of

Amyl to restore animation. He (Mr. Fisher) might say that one way or another he had tried twelve cases in his own practice, with doses varying from half a grain to a grain and a half, but the constitutional depression, after the drug had been carried into the circulatory system, was so marked on some, and severe on others, that he would, on no conditions, continue to use it. He, too, had to resort to stimulants in the half of his cases, and he could see no advantage in in the possession of a local anæsthetic which caused so marked a depression on the patient.

Mr. AMOORE, after complimenting Mr. Ezard on the methodical and scientific manner in which he had recorded his cases, said that he considered the present time a very favourable one for a review of the of the merits or demerits of Cocaine for dental purposes. It had been in use some years now, and they were better able to calculate upon its results than at the time when it was comparatively fresh to every one, and opinions favourable and unfavourable were crowding the current literature. He was one of those who had practically discarded it, but when such reassuring results were obtainable, it was tempting to try again afresh, though memories of one or two—at all events—unpleasant cases made him hesitate before doing so. What had struck him somewhat forcibly in the many reports that had from time to time been issued was, that while one man appeared to be uniformly successful, another was constantly having his experience varied by anything but happy sequels to the operation, and this with men who, from our knowledge of them, we should judge to be equally conscientious both in the administration of the drug, and in the manner in which they recorded their results. Many troubles may have arisen from the use of an impure drug, and the question arose—Could they even now rely upon always getting a satisfactory preparation? If the secret lay in this direction, then Mr. Ezard's results would point to this as a possible solution, though it did not seem to him to account for everything, and he could not quite clear his mind from a vague sense of distrust, or visions of possibly unhappy contingencies.

Dr. GUY remarked, in connection with what had fallen from a previous speaker, that the early experiments were more or less invalidated by the fact that it was only within the last two or three years that practitioners had had placed within their reach an absolutely pure and reliable preparation of the drug. Many of the reported casualties were distinctly traceable to the use of an impure preparation, and he therefore thought that any definite opinion as to the value of hydro-chlorate of cocaine in extraction should be based on reports of recent practice alone. His own experience, though much more limited than Mr. Ezard's, was entirely favourable, and led him to the conclusion that, while as a means for procuring a painless operation, cocaine could never displace the handy, safe, and easily administered nitrous oxide, it was a therapeutic agent of great value in Dental Surgery, finding its special application in those cases in which the administration of a general anæsthetic was objected to by the patient or otherwise contra-indicated.

In closing the discussion on the hypodermic use of Cocaine, the PRESIDENT thanked Mr. Ezard for the able and scientific manner in which he had presented his facts and cases before the Society. The general concensus of opinion, however, seemed to be adverse to the use of Cocaine as a local anæsthetic. Having been one of the first in Edinburgh to use Cocaine hypodermically, and that in a considerable number of cases, he had come to the conclusion that it was an unreliable and somewhat dangerous drug to use, as he had several cases which exhibited cardiac, cerebral, or respiratory symptoms of a dangerous character, which, however, might, as Dr. Guy mentioned, be due to the impurity of the drug used, and also to the fact that in the early days of its introduction one or more grains were commonly used as a dose, and this may account for Mr. Ezard getting better results with small doses and a pure drug. He had nearly given up the use of it hypodermically, on account of the uncertainty of its action, and the time it took up. Besides, the difficulty in some cases of injection, owing to the thinness of the mucous membrane, notably in the neighbourhood of the third superior molar. It might, however, be useful in certain cases.

Mr. EZARD being called upon to reply, said :—In reply to the various remarks that have been made and the questions asked, I must say that the administration of Cocaine Hydro-chlorate is a matter of practice. I am not aware of any fatal case of Cocaine poisoning in this country, and I do not place any reliance on foreign statistics, as I have no means of ascertaining the purity of the drug, etc. I have not made statistics of the condition of the pulps of the teeth, as Dr. Williamson suggests, but I have noticed that in hypertrophied or inflamed gum it is more difficult to procure anæsthesia. Mr. Fisher mentions a case of a patient becoming unconscious. I have never met such a case. Dr. Williamson thinks I make too much of the necessity of cleanliness of the syringe, but I believe dirt and impure and stale preparations are at the bottom of Cocaine accidents. Mr. Monroe mentions hypersensitiveness produced in the eye by Cocaine, but I have never seen hypersensitiveness produced in the gum, even in very nervous people. I quite agree with Dr. Guy that one cannot judge the scientific data of to-day by those of even two years ago. The preparation of Cocaine has given, and is giving still, to chemists a deal of trouble. It is difficult to get the right kind of leaf in perfect condition, and free from damp, from which to extract the pure alkaloid. In reply to the President's remarks, I have always procured the desired anæsthesia, except in the case I mentioned (No. 7); also in mouths with thin hard mucous membrane, and for upper wisdom teeth. In the anæmic, directly I see toxic symptoms, I extract, as I believe that quite 75 per cent. of the injection bleeds out immediately. Now why, I ask, should scientific men be afraid of a drug which, in small doses, only paralyses the terminations of the sensory nerves? I have used it to the total exclusion of nitrous oxide for two years, and why cannot others with the same success? Have we reached the zenith of every-day anæsthesia in nitrous oxide? I fervently hope not, and I fully believe that in Cocaine, when understood and appreciated, we have reached one more step on the ladder. In concluding, I can only express my thanks for your patient attention to and kindly criticism of my paper this evening.

Mr. JOHN TURNER made the following communication:—

ENLARGEMENT OF THE CERVICAL GLANDS, DUE TO THE IMPACTION OF LOWER LEFT WISDOM TOOTH.

Mr. A., age 21, a strong, healthy young man, without any tubercular history, consulted Dr.—— regarding an enlargement of the cervical glands. Dr.——, apprehending dental irritation as the cause, advised him to see a dentist. This he accordingly did, consulting me on the 8th of the present month. On examination, I found the glands considerably enlarged, painful on pressure, also pain at the angle of the lower jaw. In the mouth, the teeth in the vicinity were found well developed, sound and healthy. The third molar was, however, unerupted, the point of the anterior cusp being visible at the line of the neck of the second molar. On applying pressure to the surrounding parts, pus could be evacuated, having its exit at the erupted portion of the tooth. This symptom, connected with the evident want of space for the reception of the tooth, led me to advise its removal. This the patient acceded to after, on my advice, consulting his medical attendant. The operation of removal was one of extreme difficulty, a considerable degree of resistance being experienced, but it was eventually dislodged with a Coleman's straight elevator. The tooth proved to be a large, well developed three-rooted molar, measuring from crown to apex fully seven-eighths of an inch. The patient was seen the following day. The jaw was slightly stiffened, and the glandular pain intensified, which was to be expected, being due to the force employed in the removal of the tooth. Three days thereafter, there was a marked diminution of pain and swelling, the general characteristics were favourable, and pointed to a satisfactory and complete cessation of all existing complications.

NOTES ON A CASE OF FRACTURE OF THE SUPERIOR MAXILLÆ.

Mr. F. **PAGE** said the patient was admitted into Leith Hospital on 13th September, 1891, with a history of having been kicked on the face by a horse.

On admission, patient was suffering from the effects of alcohol, and on examination the soft parts over the face were found bruised and swollen, and the upper lip torn through in the middle line. The cartilaginous septum of the nose was torn and displaced, the wounded organ being somewhat carried to one side, and tilted up. Corresponding to the split in the lip was a fracture almost in the middle line of the jaws, from which branched off, half an inch up from the alveolar margin, another fracture through the left maxilla, which ran obliquely towards the outer angle of the eye. Passing off at the same place, but on the right side, a fracture could be traced running upwards towards the inner angle of the eye, and another at right angles to this, running outwards a quarter of an inch below the orbital plate, and extending backwards. The fractured parts dropped, and were pushed backwards, so much so, that on the right side the posterior cusps of the wisdom teeth alone impinged—the patient being unable to close his mouth, there being an interval of about half an inch between the upper and lower teeth in front. The whole body of the superior maxillæ seemed detached from the bones of the skull, and could be easily pulled forward.

About two hours after admission, the patient complained of something choking him, and on looking into the mouth, the right tonsil was seen to be much enlarged, and quickly increasing in size, threatening suffocation. An incision was made into the tonsil, and blood ran freely from it, the patient being turned on his face to prevent choking. This was followed by immediate relief, the swelling proving to be effusion into the loose tissue of the soft palate. Hæmorrhage was for a time free, but by means of cold and pressure, was ultimately controlled.

In two days, the patient now being comparatively comfortable, it was thought necessary that something should be done to correct the deformity, but on examination the fractured portions were found so intensely painful to the touch, that it was decided to wait some little time before attempting any correction.

Impressions were taken five days after the accident, great difficulty being experienced—though everything was done to gain the confidence of the patient—the whole body of the superior maxillæ having to be raised to gain insertion of tray and modelling composition. Fortunately the first attempt produced impressions deemed sufficient upon which to build an inter-dental splint.

The apparatus shown was designed, and on September the 20th it was applied. The patient was given chloroform, but this had to be abandoned, as symptoms of asphyxia were threatening, and the operation had to be completed with the patient in a semi-conscious condition. The splint was jumped into its place, and was found all that could be desired, the struggles of the patient alone tending to any difficulty in correcting the deformity. Following this, Petit's tourniquet was used, and applied round the vertex of the chin, in order that pressure might be gradually exerted on the lower jaw. As shown, by means of this tourniquet gradual pressure could be made by tightening the screw of the instrument, the band, however, by compressing the superficial veins, interfering somewhat with the venous return from the face, giving the patient a cyanosed appearance whenever the band was tightened. This was obviated to a considerable degree by pads of corrosive wool applied underneath the band.

Patient was fed through the opening in the apparatus with fluid foods, and in a few days was able, occasionally, to smoke his pipe comfortably, the only discomfort being caused by the continual tightening of the screw.

The lower jaw was kept continually pressing against the splint until October the 22nd, something like five weeks after the insertion. The apparatus, which had not been touched since its insertion, was then removed, and the result gave the utmost satisfaction, one or two cusps of teeth alone preventing perfect articulation.

In a few day the patient had ground these down himself, and in a short time left Leith Hospital with little or no visible signs of the accident.

The President remarked on the interest attaching to such cases of fractured jaws, and complimented Mr. Page on the successful issue of his treatment, and said that, although they did not often fall into their hands, it would be better for everyone concerned if they were passed over to the care of the Dental Surgeon for treatment by interdental splints, which gave far better results than that generally attained by the rough and ready methods adopted by surgeons.

Students' Society, London Dental Hospital.

ANNUAL GENERAL MEETING, held Monday, January 18th, 1892, Mr. E. PREEDY, Vice-President in the chair. The minutes of the previous meeting were read and confirmed.

The following gentlemen were nominated as scrutators of the ballot papers: Messrs. Taylor, Schelling, Mosely, Fouraker, J. P. Smith and Henley, of which Messrs. Smith and Taylor were elected.

The PRESIDENT then called upon the Secretary to read his report.

GENTLEMEN,—In presenting you with their 29th Annual Report, your Council are happy to be able to state that the year which has passed has been one of steady growth and evolution for the Society.

Numerically, the Society has advanced considerably, the addition of new members being 41. The attendance at the meetings has also exceeded that of past years. At the last Annual Meeting it was announced that on one occasion during 1890, there had been 60 members present. That number has, however, been exceeded on more than one occasion, and the record now stands at 68. The average has also risen to 44.

The papers read have been fully worthy of the Society before which they have been delivered, their originality being a specially pleasing feature. This point is one to which your Council would direct your attention, for, as the years pass, originality is more than ever needed, if we are to have good discussions and useful meetings, and our object is not to write papers but to gain knowledge of facts, and to disseminate that knowledge.

The Society's Prize for 1890 has been awarded to Mr. A. C. Gask for his paper on "Cocaine," and you are indebted to Messrs. Storer Bennett and W. B. Paterson for kindly undertaking the arduous task of examining the papers.

The microscopic exhibits have this year been under the able supervision of Mr. J. F. Colyer, with the result that they have been much more efficient and attractive than formerly, and your thanks are due to him for these services so cordially rendered.

The Clinical Meetings, the year's trial of which has just expired, have been so successful as to warrant their continuance in the future, despite the added burden to the exchequer, entailed by the extra meetings. Here also you are greatly indebted to Mr. Colyer for the energy and zeal displayed in making the arrangements.

The Library and Museum have been enriched by several valuable specimens and books.

It has been decided to discontinue the practice of gratuitously supplying your transactions to former members, who have left within two years. It has been found not to lead to the recipients becoming honorary members, as was hoped, and in future a direct appeal to become honorary members will be made to those who have ceased to be ordinary members.

This has been the only change in the Society's methods of procedure in the past year, and it has not been found necessary to alter any of the present laws, from which it will be seen that the administrative machinery is well adapted to its present use.

It is your Council's intention to have fresh copies of the laws printed, as several of those in the present printed lists have been superceded by others, at present to be found only in the minute books.

In conclusion, your Council hope that prosperity may not induce you to relax your efforts, but that each one may remember that it is his duty to do all in his power to maintain, and if possible, raise the present position of the Society as "Premier Dental Student Society of the World."

The PRESIDENT then called upon the Treasurer to read his report:

MR. PRESIDENT AND GENTLEMEN,

In presenting to you to-night the Annual Report of the financial condition of our Society, I have much pleasure in announcing that he year has been a most prosperous one, the balance in the hands of the Treasurer being, so far as I can gather, larger than at any period of our existence.

Last year your Treasurer lamented the decrease in the amount of honorary subscriptions. I am thankful to be able to point out a marked improvement in this respect, and our gratitude is due to the members of the staff and other gentlemen for their support ; and as an appeal is to be made to old members who may like to keep in touch with the Society, I trust that there will be a still larger increase next year.

The subscriptions received during the last year amount to £28 3s., as against £19 10s. of the previous year, and the expenditure to £23 8s. 3d. as compared with £20 18s. 5d., leaving a balance on the year's working of £4 14s. 9d., and increasing our reserve fund from £21 18s. 6d. to £26 13s. 3d.

This increased expenditure is not the result of extravagance, but is accounted for by the fact that it includes payments to the amount of £2 17s. 6d. which should have been included in the last report, and also by the expenses in connection with the Clinical Meetings.

In conclusion, my sincere thanks are due to Messrs. Clarence and Gabell who have been good enough to collect subscriptions in my inevitable absence from the Hospital.

	£	s.	d.		£	s.	d.
To Balance, 1890	21	18	6	By Student's Prize	3	3	0
,, Honorary Subscriptions	13	15	6	,, Teas	5	10	0
,, Ordinary Subscriptions	10	2	6	,, Honorarium to Camps ...	2	12	6
,, Entrance Fees	4	5	0	,, Printing Transactions, &c.	10	14	9
				,, Miscellaneous	1	8	0
				,, Balance with Treasurer ...	26	13	3
	£50	1	6		£50	1	6

The ballot papers having been collected, the scrutators retired to count the votes.

On casual communications being called for—

Mr. GILLETT showed two oblique rooted upper molars like those described by Mr. Pearsall, and also two lower molars, one having three and the other four roots.

Mr. PARRIS showed a lower molar which had been twisted half-way round in the mouth, and which had two geminated teeth attached to it.

Mr. MOSELY showed a three-rooted lower molar from a Kaffir's jaw

Mr. J. P. **Smith** showed models of a lady's mouth with the absence of the lateral incisors, and with retention of the one temporary canine in the upper, and in the lower with a supernumary tooth between the two bicuspids on the left.

The **Scrutators** having counted the votes, declared that the whole list as recommended by the Council had been elected.

The **President** then called on Mr. H. S. Prideaux for his paper on "Fractures and Dislocations of the Jaws." (See page 112).

In the discussion which followed—

Mr. **Truman** said that every paper he had heard read on that subject had referred to Mr. St. George Elliot, and his cases in the American war, and he had taken the trouble to go and see Mr. Elliot and try and find out what his treatment really was, but though he had had it explained very thoroughly, he felt bound to say that he came away no wiser than when he went.

He thought the Hammond splint much the best where it could be used, but, unfortunately, there were a good many cases where you could not use it as when there were only a few loose teeth or when a jaw was fractured at the angle. He did not believe in fitting the main wire of a Hammond to the mouth itself as the parts were excessively tender, and any unnecessary manipulation gave the patient a great deal of pain for no reason, his plan was to have several sizes ready made, and he generally found that he had one that would fit the case in hand, and which if not put on too tightly would allow the fragments to move into perfect position with the pressure of mastication, and then at the second visit he tightened it up. With regard to the position of the fracture he had found from his own experience that it was commonest between the two bicuspids, but the canine eminence was always quoted in books as the place where most fractures took place. In taking a model of the fracture he would mention one word of caution, and that was to see that there were no loose teeth in the mouth, as neglect of that once made him push one down the throat, though, fortunately, he was able to get it up again. Dislocation from extractions usually occurred under gas, and were from the anæsthetist using too large a plug.

Mr. J. P. **Smith** mentioned a case of a dentist who was filling an upper tooth, and on finishing was surprised to find his patient's jaw dislocated, and after trying for an hour to reduce it he called in a medical man who also failed, and finally it took Mr. Hulke a very long time to reduce it. He thought a gutta-percha splint ought never to be used by a dentist, as it is quite obsolete He thought Hammond's splint far and away the best where it could be used. He had had only one case of fracture himself, which was caused by the kick of a horse in a boy, which broke the jaw between the bicuspids and drove one of them into the antrum, but he was happy to say the case terminated very well.

Mr. CLARENCE said that when he had only been at the hospital two months he had a similar dislocation to Mr. Smith's, and from the same cause, but with the help of a fellow student he reduced it.

Mr. FOURAKER said that to reduce an obstinate dislocation Mr. Bloxam always told him to sit the patient on the floor with his head between the operator's knees, as in this position you could get more power than in any other.

Mr. NORTHCROFT regretted that Mr. Prideaux had omitted to mention the treatment of fractures of the ramus.

Mr. G. HERN mentioned the difference between a compound and a comminuted fracture, and said that the best way to fit the wire of a Hammond's splint was to take a metal die and strike it up on it with a bone mallet.

Mr. GABELL wanted to know if it was not best to get the fragments into position first and then take a model.

The PRESIDENT said that he rather wished more time had been given to dislocations. He was once told that the coronoid process locked with the zygomatic arch, and that Nélaton, the French surgeon, had devised an operation for it, but had never been able to find any reference to it. With regard to fractures, in wiring a Hammond splint, there were two useful points to attend to. First, remove all tartar from the teeth, or else the binding wire will catch in it; second, cut the wire obliquely so as to get a sharp point, which will pass between the teeth easily.

Mr. PRIDEAUX then replied.

The PRESIDENT then proposed a vote of thanks to Mr. Prideaux for his paper, and to those gentlemen who had brought forward casual communications, and announced that there would be a "Clinical Evening" on the following Monday, January 25th, when Mr. Hepburn would show some "Continuous Gum Work," and that the next ordinary meeting would be on February 8th, when Mr. Price would read a paper on "The Necessity for a Systematic and Periodical Examination of the Teeth."

The proceedings then terminated.

THE DENTAL RECORD, LONDON: MAR. 1, 1892.

THE MEDICAL DEFENCE UNION.

POSSIBLY some of our readers are not aware that there exists a special organization for the protection of qualified men whose functions may be briefly put: (1) To support and protect the character and interests of medical practitioners in the United Kingdom. (2) To promote honourable practice, and to suppress, by legal means, unqualified practice. (3) To advise and, if necessary, *defend* any of its members who may be threatened with legal proceedings in the performance of their professional duties. Membership involves a liability of 10s. subscription and a guarantee, the minimum being £1, but this will only be called in under extraordinary circumstances. The subscription and the guarantee, the amount of which, of course, the member of the Union himself decides constitute the sole liability of the member. Anyone who cares to see the very large number of occasions which arise for seeking aid from the Union should write for the annual report to the Hon. Secretary. The Medical Institute, Birmingham. Cases of blackmailing, intimidation, illegal practice, refusal to pay just accounts, actions for malpraxis got up to avoid payment are not confined to the busy medical practitioner, our columns would be crowded with legal intelligence of like cases, the parties figuring in which are dentists, did we not avoid dwelling upon them, unless by so doing we can help the injured or assist the cause of justice. But, although the bulk of dental practitioners are not, as yet, qualified as surgeons, still there seems no reason to doubt that the Union would extend its benefits to all branches of the profession, and certainly it would in many instances be a great boon to dentists to have such a powerful agency at their back. It may be said that the Association really holds the place of the Union as far as dentists are concerned and possibly this may be so, still it would unquestionably strengthen the hands of the Association if its work in this direction were assisted by the Union. The Union will prove a great boon to its subscribers, and we cannot but hope that all dental surgeons who are qualified for membership will help themselves, their medical confrères, and the Union by giving in their names for membership. It is surprising how often the mere mention of the Union as a "defendant" instead of the harassed and often impoverished practitioner will make a blustering litigant pause before entering the legal lists. It may be easy to intimidate and coerce the one, but a very hard matter indeed to frighten an astute firm of solicitors representing a powerful and wealthy corporation. We write solely in the interests of our readers, and urge them to ascertain whether their present affiliated bodies do away with the necessity of adding to their safeguards by joining the Union.

Dental News.

ANNUAL DINNER OF DENTAL HOSPITAL ATHLETIC CLUB takes place March 5th, at the Holborn Restaurant, at 7 p.m., Mr. Morton Smale in the chair.

THE ANNIVERSARY DINNER OF THE LICENTIATES IN DENTAL SURGERY, AND ODONTO-CHIRURGICAL SOCIETY, will this year take place on *Friday*, the 11th day of March, in the ROYAL HOTEL, Princes Street, Edinburgh.

Dinner Hour—6.30 o'clock. Tickets—£1. 1s.

Legal News.

Walsall County Court.

ON Thursday, before his Honour Judge Griffith, an action was tried in which Jane Norton, of Darlaston, claimed £0 9s. from Mr. H. Campion, surgeon dentist, of Walsall and Birmingham, for the detention of a top set of artificial teeth and damages for their detention. Mr. E. Slater (instructed by Messrs. Slater & Co., Darlaston) appeared for the plaintiff, and Mr. H. H. Jackson (Stanley and Jackson, Walsall), appeared for Mr. Campion, the defendant.

Plaintiff's case was that in February, 1891, she consulted defendant as to re-modelling and re-making some teeth which had been made for her by another dentist ; that defendant, after some demur, did the work, and they were duly put in ; that about three weeks after she came again and said she was not satisfied with them, and that she then left with defendant an upper set she had had made in Liverpool about seven years ago, with instructions for him to keep them for her ; that about eight months after she went for the set left with defendant, and he said they were at Birmingham, and that two days later he sent her an upper set which she returned through her solicitors, stating that they were not the teeth she left with defendant. Defendant stated that the teeth were left with him against his wish, as they were no use to him, and she persisted in leaving them, and said they were no use to her, and that she expressed herself delighted with the success of his work ; that he was surprised when she applied for them after a lapse of nearly eight months ; that he wrote her name on them when she left them and rubbed off the name when he returned them ; and that they were the identical teeth left with him. He (defendant) also produced the cast of her upper jaw, and considering the teeth had been made seven years and the cast on which they were tried had been taken only a few months ago, there seemed no doubt the teeth had been made for the same jaw.

Mr. Jackson, in cross-examining plaintiff, suggested that, as he had scientific witnesses in the persons of Mr. Charles Simms, dentist, Birmingham, and Mr. J. Williams, dentist, Walsall, both men of great experience, plaintiff should adjourn to a private house and have the teeth which she said were not hers tried in her mouth, when it would soon be seen if they were made for her upper jaw, as no two jaws were alike. This was agreed to, the experts and solicitors, together with plaintiff and defendant, adjourning to the private room, and after a careful examination, Mr. Simms and Mr. Williams swore that the teeth in question had undoubtedly been for her jaw, and that they could not find another jaw in the town or district that would correspond with it, as no two persons' jaws were alike.

After a long hearing, the Judge said there seemed no doubt about the teeth being those left by plaintiff, and he accordingly gave judgment for defendant, and remarked that the teeth made by Mr. Campion for plaintiff were a splendid fit as tried on the cast of her jaw.—*From the Walsall Observer and South Staffordshire Chronicle, Jan. 30th* 1892.

Journalistic Memorabilia.

NEURECTOMY IN TRIGEMINAL NEURALGIA.—The treatment of obstinate neuralgia of the trifacial nerve by the radical method of removing the affected structures is recommended by Dr. J. F. Putnam in a paper communicated by him to the Boston Society for Medical Improvement; and his examinations of the records of the operative treatment is favourable to it as a means of relief. He observes that during the five past years sixteen patients have been operated on at the Massachussetts General Hospital twenty-six times, and at several of the operations two or three nerves have been removed. A considerable amount of relief was received in every case, and in only three instances were untoward results noted. Suppuration of the jaw continued in two for some time subsequently, and in one section of the inferior dental nerve in the mouth was followed by difficulty in the use of the tongue, a marked lisp resulting, which remained for a long time.

Dr. Putnam points out that in most cases of neuralgia there are present an irritable condition of the nerve centres as well as of some one or more peripheral areas. To overcome the first of these conditions, it is probably important to cut off as far as possible the the stream of impulses that fall upon the diseased nerve centre, whether they come by way of the nerves that are themselves inflamed, or by way of contiguous healthy nerve. It is therefore recommended that operations should be both extensive and deep, including as much as possible of the peripheral area, and getting rid as far as feasible of the diseased nerve and its thickened sheath.—*Med. Press and Circular.*

From "Items of Interest."

EDITOR ITEMS:—To prevent breaking, and for strengthening the duplex spring of Shaw engine, I use rubber tubing that will fit snugly to spring, using clamp forceps to spread the tubing while applying. I first tried this six months ago, and I am still using the same spring.—*Chas. H. Stadlinger, D.D.S., Meadville Pa.*

The DENTAL RECORD.

Vol. XII. APRIL 1st, 1892. No. 4.

Original Communications.

AN INAUGURAL ADDRESS "ON STUDENTS' SOCIETIES."*

By W. B. Paterson, Esq., F.R.C.S., L.D.S.

Gentlemen,—

I believe it is on such an occasion as this that what is termed an inaugural address is expected by you from your President. Now I confess that the title is at a first glance rather an awe-inspiring one, and calculated to strike terror of no inconsiderable degree to the mind of anyone suddenly called upon to deal with matters presidential as I have been, in a society of the character of that I have now both the honour and pleasure to address. But, gentlemen, upon a second and closer investigation the causes for alarm are less manifest. And just as it often occurs in the case of the student with, let, us say a none too easy examination paper before him, and amidst strange surroundings, a curious nightmareish feeling of utter powerlessness to think of anything to say at all by way of reply, much more anything adequate, seems to overcome him for a moment, still he generally manages to shake it off by an effort of concentrating his mind more completely on the question before him. So it is in my case, and I should mention that I have an advantage over the individual alluded to in the fact that I am surrounded by gentlemen whose faces are familiar to me and whose dispositions I am convinced are amicably disposed towards me, or I should scarcely be in the position I now occupy to make the statement.

Well then, gentlemen, the first thing that naturally occurs to me to do is to offer you my most sincere thanks for the honour you have conferred upon me by electing me to be your President. In accepting this mark of your kind appreciation of my humble merits, I do so with every desire to fulfil to the best of my ability the duties which appertain to the office, and to promote the best interests and general welfare of the society.

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*Read before the Students' Society, Dental Hospital.

In saying this I am led to consider that possibly I could not do better than confine the substance of the remainder of my remarks to a statement of my views on the reasons for the existence of this Society, and to a lesser degree its mode of management ; and I think it not improbable that you may be interested to know what the views of your new President are on such subjects. To commence with, I imagine, a general consensus of opinion has hitherto existed, and is likely to continue, with those who fill this chair on the matters I propose to speak about, for the simple reason that we have all been members of this Society at one time or another, more or less active members too possibly, and therefore, we have been brought to know its advantages and to appreciate the value of its work. Our methods may vary in particulars perhaps, but the principles underlying our actions will be found based upon the same foundation. Now I think the objects for which our society exists are twofold —educational and scientific—or at least they are the chief ones.

Educational in the sense that the members who attend and listen to, or take part in the discussions upon papers and communications cannot fail but to be instructive upon the different matters of dental and general medical interest that come before them, and that too, in a more practical and therefore more lasting way than the same matters will often appeal to them from a mere reading of books of private study at home. " In the multitude of counsellors there is wisdom," be it remembered ; again, the society is educational in the opportunities it offers to one and all to become proficient in the art of expressing one's thoughts upon a subject of debate in an appropriate, and with practice, even elegant manner. And here I would remark that this Society should be looked upon as a nursery for the development of the latent elocutionary powers amongst us on all suitable occasions, and thereby render it more easy hereafter for members to express their opinions in the wider field of publicity of the larger and more learned societies to which they may be elected and in a manner at once both clear and precise. All of which advice it is much more easy for me to give to you and for you to receive than for either of us literally to carry out in practice—I emphasize it, however, because I know that it is a question which has an important bearing upon the attendances of students at meetings of this sort. Men who are unable to rise in their places and state their opinions and experience on the subject of debate for want of some little encouragement or assistance to enable them to overcome the ordinary

Englishman's dread of hearing his own voice in public are apt to wander to meetings of possibly a more convivial and less formal nature, and thereby to deprive themselves of much that would be useful and instructive to them from a professional point of view. It therefore behoves us to afford that needful assistance whenever we can by a display of kindly tolerance to our budding orators.

The scientific aim of our Society is of course also a very important one. And I believe that communications brought forward and papers read here offer a great incentive to all, who will interest themselves in the subjects of them, to pursue their work, as students at this hospital and elsewhere, in a manner, which by its care, attention, and desire for accuracy, shall evoke the true scientific spirit; and lead to valuable original research on matters affecting our profession, if with no wider object.

No one, I think, can doubt the scientific tendencies of a Society like this: and although original contributions to the general store of knowledge may not always be forthcoming, they are to be expected nevertheless. For the studies pursued at this hospital as well as the large number of cases of interest constantly afforded us, must all tend to provide suitable material for original observation and thought, such as does not so frequently fall to the lot of the man who is engaged in the active work of his profession away from its walls. I am aware that it may be urged that the time at the disposal of the dental student is not of a duration sufficient to warrant these views being carried into actual practice, and that, therefore, they are rather idealistic, or at any rate so far as the large majority is concerned.

But making due allowance for the shortness of time and the large number of subjects belonging to the curriculum of study, it is not too much to expect, I trust, that the scientific spirit pervading this Society will greatly predispose to the cultivation of habits of accuracy of thought and action, even in the ordinary daily work of those who have felt its influence; and at some future time perhaps stimulate them to further endeavours in the lines I have previously indicated.

And as a means to an end in arriving at a result so satisfactory and praiseworthy, let me commend to your favourable notice, the need for close observation, and a regular habit of careful note-taking in all cases of interest that are brought to your notice. I look upon note taking as a very important adjunct to the student's, as well as the practitioner's means at command, for the increase and advance of knowledge ; and I will be candid with you, and confess, that I wish I could see more of it in operation amongst you in your hospital work ; for although I am quite aware that much valuable information can be carried away and afterwards committed to writing; still it is a most important thing to jot down the chief heads or skeleton outlines of the matter in hand at the time when the information is obtained " red hot " if I may use such an expression.

Most of you I have no doubt know already the value of cultivating this habit, and the seniors amongst you doubtless know how to appreciate the results of their attempts in that direction, and will do still more so, as the period for qualifying as dental surgeons approaches nearer.

If only to lighten the labour and remove the tedium of reading up for examinations it is worth while adopting early a systematic method of note taking, one that shall include notes of varying degrees of usefulness both for now and the future post-graduate career of the writer and also to arrange them in such a manner that they be rendered easily accessible on all occasions. The whole matter is, however, so self-evident of utility that I will say no more about it beyond this, that no special faculty is required to cultivate it—in fact nothing more than the exercise of the ordinary common sense powers of discrimination. Increasing age with increasing experience and knowledge will demonstrate the accuracy of the use of those simple natural powers of the moment, by a sifting process akin to the separation of the chaff from the grain when the collection is subjected to your maturer judgment ; and in the meanwhile, many advantages have been derived from the educational point of view.

Another matter which occurs to me, not unconnected with note-taking, is the " materiel," in the shape of cases daily passing through the rooms of this hospital. Here you will find a large field for instruction and excellent opportunities for collecting facts and specimens that shall serve in this Society as casual communications, and frequently too we shall find that we derive quite as much valuable information from such communications, as we do from elaborate and well thought out papers.

In the ordinary and " gas " extraction room downstairs, many cases present themselves which have a valuable interest for us apart from the more immediate trouble that they come in search of relief. Some are obtained for us by those on the alert, others are observed at the moment, and afterwards allowed to depart without so much as a note or a model being taken. Personally I have often rescued some of these latter cases from a fate of being consigned to oblivion, or interesting specimens of them, from the capacious maw of the ever-handy spittoon. The junior student learning to acquire the manual dexterity requisite for the extraction of a tooth, is sometimes rather apt in the excitement of the moment induced by the novelty of his position, to forget the interest of the specimen in his eagerness to practise the operation. He, however, must not be blamed altogether, he is there for the purpose of developing operative proficiency, but after the preliminary stages of his course, it is to be expected of him that he will not forget to develope the powers of diagnosis and improve his knowledge of pathology concurrently and in an equal degree with the perfection of his manual skill. I could relate some curious examples of forgetfulness to note conditions of the kind I have been alluding to that have come under my own observation; but that relation would be as a certain novelist of the present day frequently remarks, " another story," so we will pass on.

From what I have already said, it will have been observed that I set a considerable value both on the educational and scientific aims of this Society, and when I further remark that it should be the duty of every man who enters this hospital to belong to it and to support it to the best of his ability in every way that he can, I shall only be acting in accordance with my own expressed convictions, and I trust the opinions of all who have the true interests of the Society at heart.

I might have mentioned and dilated upon the social aspects of our Society and the opportunities presented at its meetings of establishing closer bonds of attachment between men of the same or different years and standing in the hospital by the consideration and discussion of matters of common interest, &c. And the unrivalled means it possesses of giving a distinctive tone and feeling of true *esprit de corps* to its members; but I have already occupied your attention, and I am afraid taxed your patience too much with this address that it will be an exhibition of charitableness on my part to refrain from further wearying you on a matter which almost goes without saying.

Before concluding, I would like to refer very briefly to one or two matters which have been mentioned. I pointed out how this Society stimulated the collection of specimens of dental interest, but

I said nothing about our museum, to which I naturally presume most of them will go. I have not had an opportunity lately of inspecting our collection, but I am aware that we are ever ready to receive specimens of all kinds relating to our specialty ; and it is quite possible that our eagerness to develope this museum is only counter-balanced at times by a lack of sufficient space to display the specimens when obtained to the best advantage ; but I do not speak with an accurate knowledge on this point. It just occurred to me that our museum might form an excellent nucleus for a teaching museum at some future period, if as might happen, the collection of the Odontological Society, were not quite so easy of access to us, as it is at present. And with that possibility in view, we might proceed gradually to develope it on lines that would be useful educationally. And to give only one example of what I mean, I mention the presentation of series of models and apparatus used by all our members in the successful treatment of ordinary cases of teeth regulation as well as in the extraordinary ones ; and with a proper classification, and from large numbers of such cases much useful information might be drawn. With our mechanical department close at hand the difficulties that used to be complained of, no longer exist to hamper us. Two sets of models, one to keep for the museum and to be signed up on by the authorised officers, the other to work to, are easy things to accomplish nowadays. I suggest this as one example, perhaps it has already occurred to our Curator and some of you, others will readily present themselves to your minds. The desire which obtains at the general hospitals amongst students, to enrich with their own contributions the museum or storehouse of knowledge of their *alma mater* will equally, I am sure, obtain at this school.

Another matter I also referred to previously, concerns other learned societies that may hereafter claim you as members, I presume most, if not all of you, will consider it a duty you owe to your profession to seek election at some future time to the Odontological Society of Great Britain, a purely scientific society which deals with every subject that relates to our specialty on its merits as a matter worthy of attention ; and whose rules and customs we adopt here as far as we are able. The other is the British Dental Association which besides its scientific meetings held in all parts of these islands on similar lines to the parent society just mentioned, also exercises an important function of a somewhat political nature, by knitting together a very large number of all the dental practitioners of the United Kingdom in a bond of union for the common purpose of maintaining a proper professional spirit in all that relates to the science, art, and practice of dentistry, and generally to raise the tone of the profession as a whole, by an insistance on the due observance of the provisions of the Dentists' Act "by such lawful means as may be necessary."

That we are favoured at our meetings by the presence of gentlemen who are members of these societies, and some of whom I see are officers of this society, as well as by that of other old students of the hospital, should be a subject of congratulation to us, for we may rest assured that they will be able by their experience to do much to increase the importance of our Society and enhance the value of its debates.

Gentlemen, I will no longer trespass upon your time, but thank you for the patience and attention with which you have listened to my remarks ; and also once again cordially thank you for the honor you have done me by electing me your President.

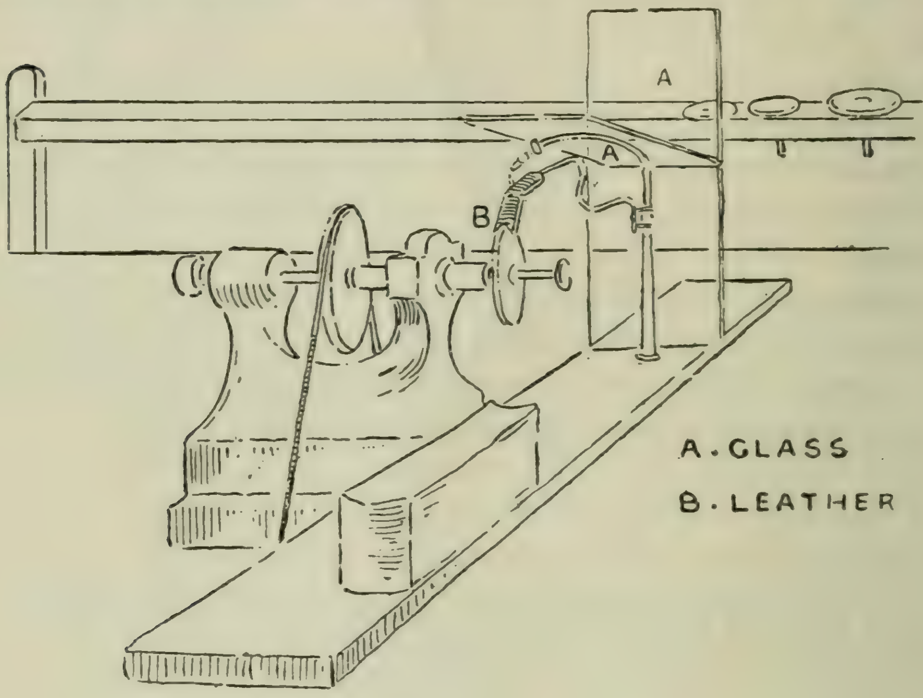
THE WORKROOM AND ITS TOOLS.

By W. Booth Pearsall, F.R.C.S.I., Dublin.

(*All rights reserved*).

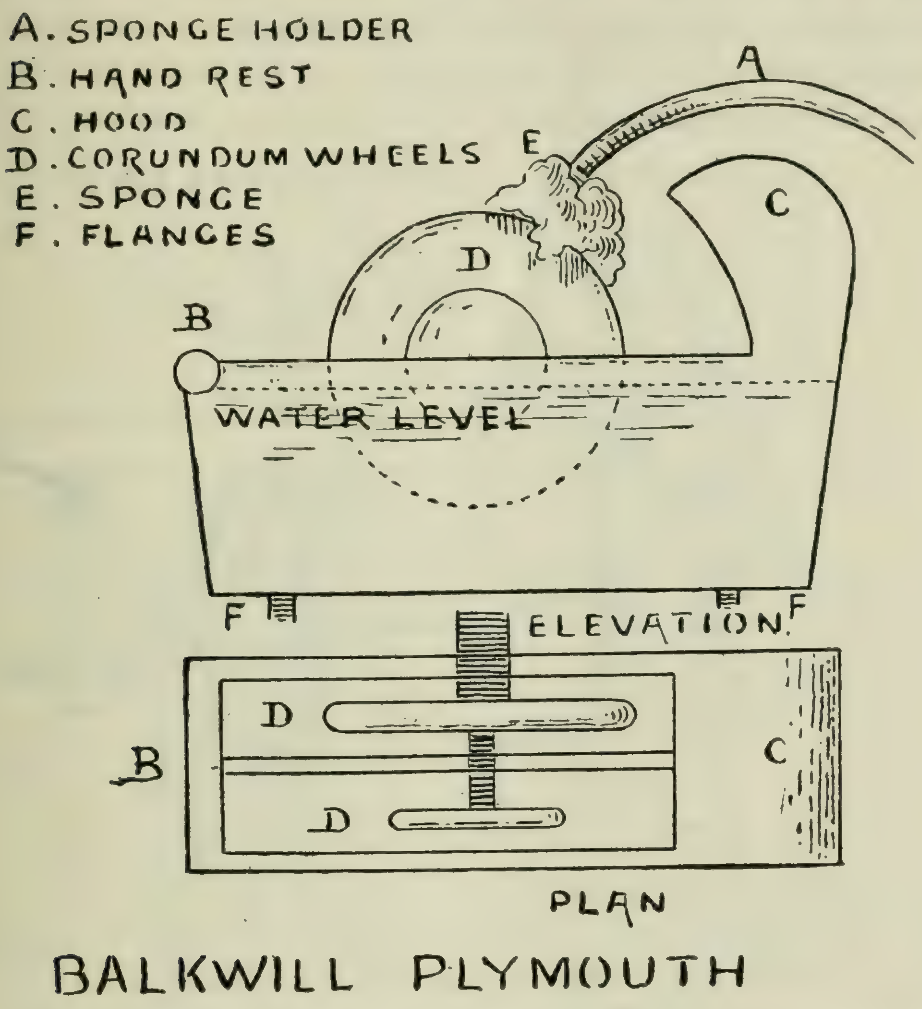
Having described the method of grinding teeth which I use in my own practice as the result of many years experience, I shall now proceed to lay before the reader the designs used by other dentists, who are, like myself, not ashamed to be considered workmen, and who have kindly furnished me with particulars and diagrams of their different methods. Mr. J. A. Biggs, of Glasgow, lecturer on dental mechanics in the dental school of that city, employs a similar method of wetting his corundum wheels, so as to avoid splashing, to that already described in my own workroom. By Mr. Biggs' method, as can be seen in the illustration, the town water is conducted to a suitable position above the corundum wheel, and the leather tongue acting as a water guide, is held over the wheel by an independent arm which allows of adjustment. When

I experimented for preventing the splashing of water from corundum wheels some years ago, I used little tongues of hard wood, which were hinged to the edge of the splash-guard behind the wheel, while the free end touched the top of the corundum wheels. This plan answered every purpose by intercepting the water thrown off by the centrifugal force of the wheel, but the wood made a noise as it struck the rough wheel during its rotation. From hearsay description of my method, Mr. Biggs was led to use a piece of leather, instead of the tongue of wood, with the advantage of completely getting rid of the noise, as well as the tendency to wear, by touching the wheel much more lightly with the water-guide. The splash from the back of the wheel, which is not intercepted by the leather, is caught by two glass splash-guards, which are seen in the illustration. This drawing has been made in perspective, in order to give a clear idea of the details. The water supply, the leather tongue, the corundum wheels, and the glass splash-guards, are all clearly figured, as well a the little rack in the background, in which the smaller corundum wheels, used by fine fitting, are kept out of the way of the workman, and are at the same time ready to his hand. It will also be seen in the illustration of Mr. Biggs's arrangement that a tooth struck out of the fingers of the workman would either be caught by the hand-

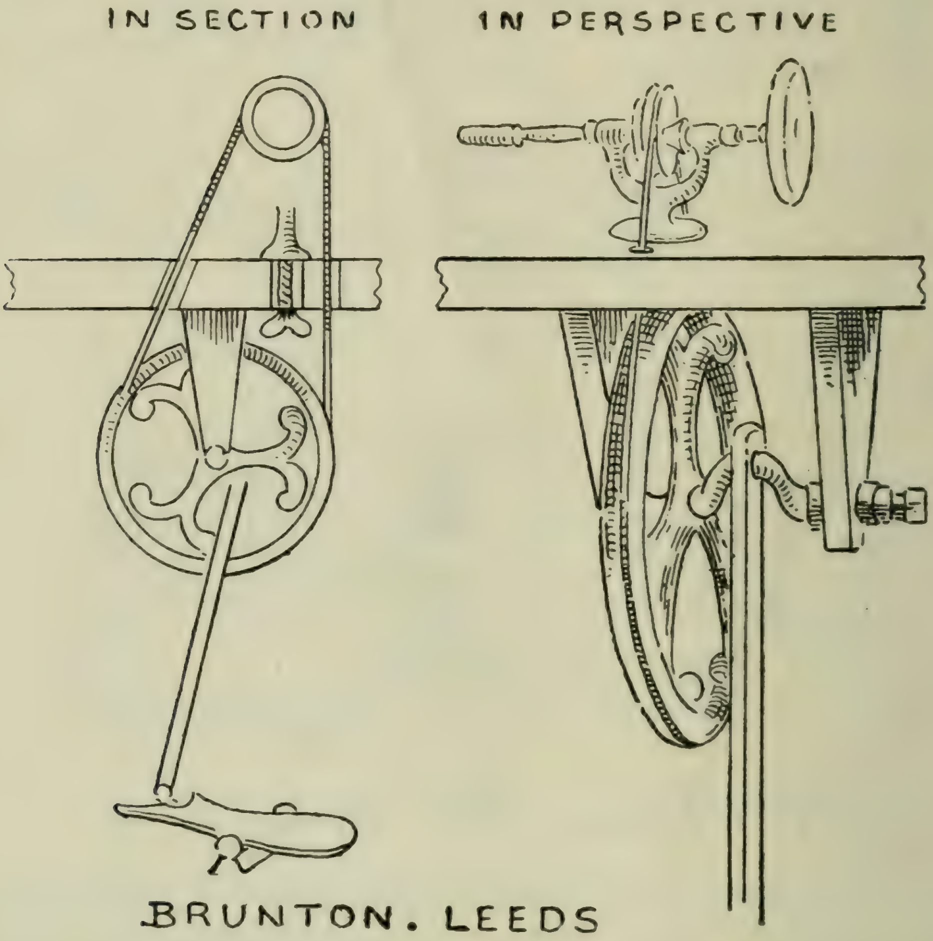


BIGGS. GLASGOW

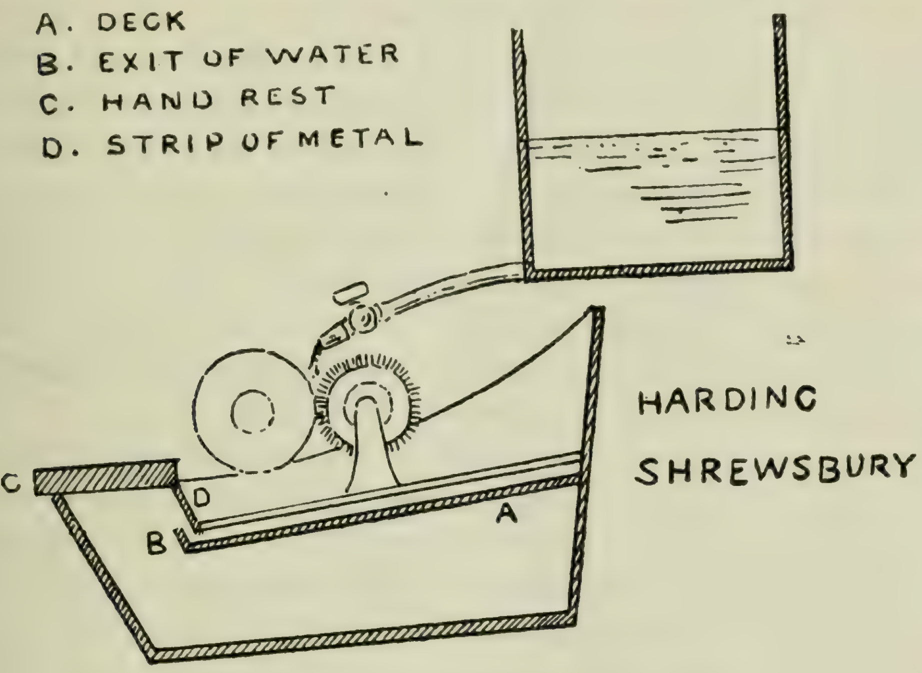
rest, or in the long trough that guides away the surplus water to a vessel resting on the floor, or would be struck directly on the floor.



Mr. Balkwill, of Plymouth, and Mr. Lennox, of Cambridge, on the other hand prefer to *immerse* the corundum wheels in clean water held in a trough like a grindstone. The illustration explains Mr. Balkwill's method to the practical worker. Unless the lathe is run at very high rate of speed, it is quite true that little or no splashing takes place with immersed wheels, when rotated towards the workman, and the water in which the corundum wheel rotates quickly washes off the detritus from the surface of the wheel, particularly if care is taken to keep the water at a uniform level in the trough, while at the same time the turbid water is allowed to flow away. Immersed grinding wheels have, to my mind, one very great disadvantage, the difficulty of recovering quickly, out of the trough holding the water, a tooth or any other object which may be suddenly struck out of the fingers by the rotation of the corundum wheel, for by the deep construction of the trough, it invites neglect in removing detritus, and the missing tooth is often buried in the mud at the bottom. The trifling service needed to clean the trough is not unfrequently put off to a "more convenient season" which is commonly found in the middle of a heavy press of work when every moment is precious. Mr. Brunton, of Leeds, prefers his corundum lathe arranged in the method figured in the illustration, the details of which have been drawn somewhat out of scale, in order to make them more easily understood. It will be seen in the illustration that the driving wheel is set just clearing the under surface of the bench, and carries a short driving band. The treadle, which is fixed to the floor, acts upon the driving wheel by means of a long rod connecting the treadle and the crank of the driving wheel. With a view of decreasing or increasing the tension of the driving band, it will be seen that the lathe head can be moved in a slot in the bench by tightening or relaxing a thumb screw to and from the workman; and in order to allow great grip to the driving band without increasing



its tension, an india-rubber ring is placed over the pulley of the lathe-head on which the driving band rests. Mr. Brunton has not informed me how he *wets* his corundum wheels, but he considers Mr. Harding, of Shrewsbury, has invented the very best method with which he is acquainted for that purpose, and which I have figured.



SECTION

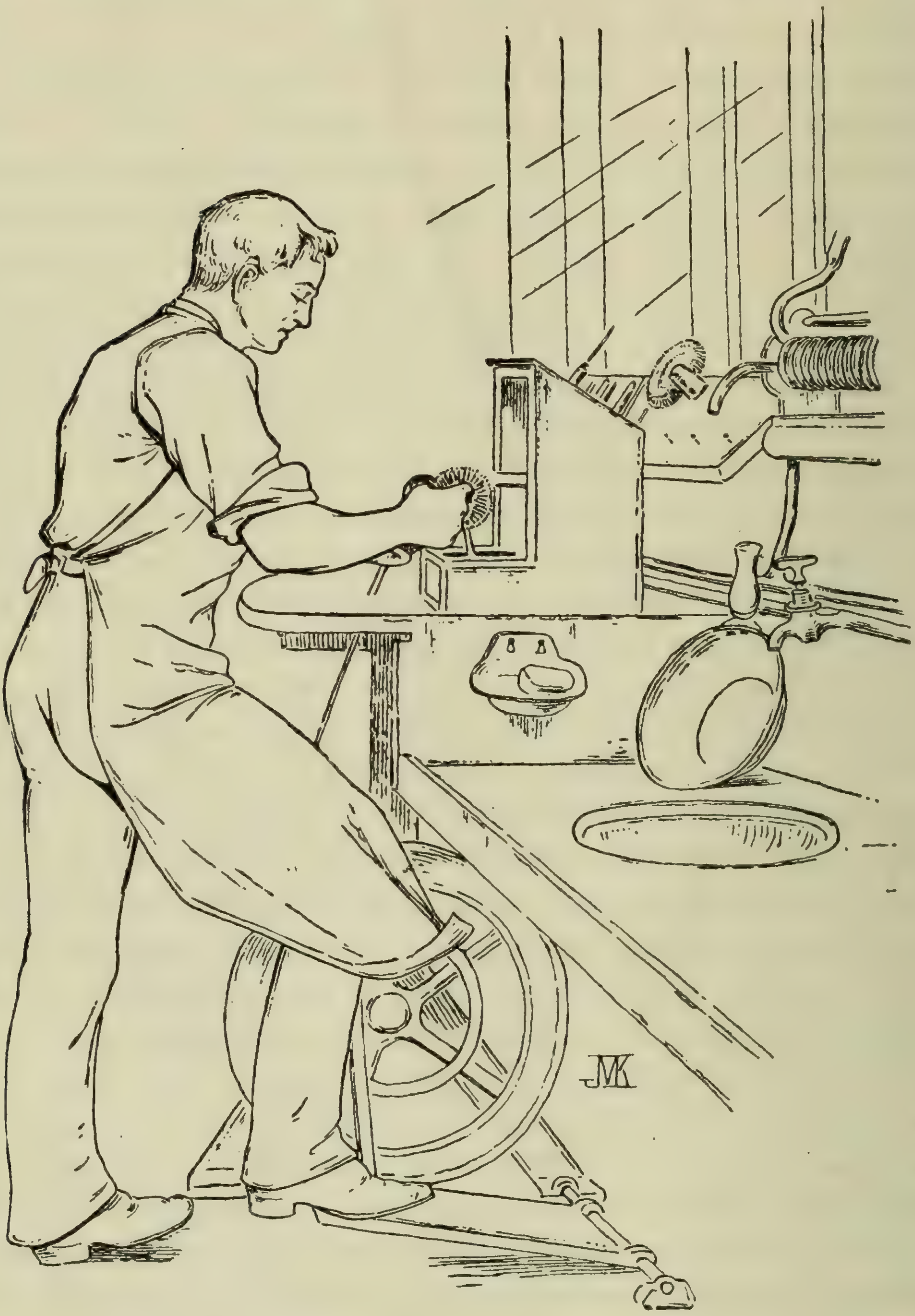
In Mr. Harding's plan, the water is led by a small tube, from a tap connected with a reservoir, to a point between the grinding wheel and a worn-out polishing brush, which is set on a moveable support that slides on a rod fixed over a sloping deck, on which the waste water drips. The polishing wheel is fixed with the bristles touching the periphery of the corundum wheel, and as the brush is held stiffly in its support, it can be moved round as the bristles get worn away. The hand-rest is made of wood, which slides on the edges of the water pan below the corundum wheel, and has attached to it an apron formed of a piece of zinc or copper, to prevent a tooth from falling under the hand-rest. The waste water drains away from the lowest part of the sloping deck. The diagram shows clearly the construction of Mr. Harding's lathe fittings, and the way the old polishing brush can be adjusted to the grinding wheel.

These illustrations of corundum lathes embody all that I have been able to find of a practical and novel character in their equipment. To busy practitioners, I think it will be found a matter of some moment that clean water should invariably be used in grinding porcelain teeth. With the muddy water so commonly used I fear a good deal of the fitting of these teeth must be to a large extent guess-work, as it is quite impossible for the workman to see what part of the surface he is grinding. With clean water the view of the workman can hardly be said to be interrupted, while the speed gained is very much greater than when muddy water full of grindings is used. Many dentists prefer to work at their grinding lathes sitting down, others prefer to work standing up ; advocates of both methods appear to turn out equally good work, but that the sitting posture is more fatiguing, and less healthy, I have little doubt. Having been trained in the standing method myself, and having seen it adopted in all the good workrooms with which I am acquainted for a similar reason—that is freedom of circulation in the lower limbs, as the legs can be moved instinctively when in a standing posture, so as to balance the weight of the body, and the workman is not obliged to work in such a stooping position as when seated—I have no hesitation in expressing my opinion that it is not only the most healthful, but the most workman-like position. A hand-rest is not so frequently placed to corundum grinding wheels as it ought to be, and it will be found a very great luxury. It should be made of a piece of hard wood, about two inches wide, with the edges carefully rounded. It ought to be brought to such a distance from the grinding lathe as will enable the workman to rest the "heel of his fist" on the hand-rest, while it is easy for him to push the tooth forward, or withdraw it, from the cutting edge of the wheel while holding it firmly with his fingers. A slight movement forward of the wrist, about half-an-inch, on the hand-rest, may be necessary to get the correct position, on the part of a small-handed workman, but this slight movement made, there can be no difficulty in manipulating the tooth with the fingers of the right or left hand, as may be desired. In my youth I was taught to hold the tooth to be ground in my left hand, while the right hand rotated the driving wheel of the little hand-lathe, then used by means of a handle. I can now grind a tooth as well with one hand as the other, but in comparing the different plans figured for use in grinding teeth, it is very interesting to see how men engaged in the same pursuit have unconsciously used the same ideas without communication with each other, and it is possible that these illustrations may bring out other, and possibly better, designs for the purpose I have described.

There is one more tool to be mentioned as belonging to the grinding bench not usually seen in dental workrooms, but nevertheless of the greatest use, namely, a carbonate truing tool, for trimming the edges of corundum wheels when they get out of truth. A diamond truing tool that will do all the work wanted for our purposes can be purchased ready for use for 10s. or 12s., and will save its own cost in a short time from the rapid way the edges of corundum wheels can be rounded or squared or trued. I am indebted to Mr. Charters Birch, of Leeds, for bringing this invaluable tool under my notice, for by its aid I have been able to resuscitate corundum wheels that are very commonly thrown aside as useless.

As will be seen in the plan, the basins for washing, with taps of hot or cold water are placed in the middle of the workroom, between the grinding lathes on the right hand and the polishing lathe on the left. These iron enamelled basins are set in a thick piece of wood 18 inches wide, the top edge of the basins being 34 inches from the floor. Covering the wood and overlapping the edges of the basins is a sheet of lead which is turned up on the wall to protect it.

The left hand basin is used for scalding or cooling flasks, and under its cold water tap, work that is being polished at the polishing lathe, whether gold or vulcanite, is washed. Over this basin, a Fletcher's instantaneous water heater is placed, so that by lighting the gas and slowly turning on the water, an unlimited supply of water scalding hot can be obtained for melting the wax out of the flasks. The jet of water from the instantaneous heater is so placed that when the flask is held beneath it, there is abundance of light in the day-time to enable the workman to see that every particle of wax is removed, as well as that none of the teeth invested in the plaster held in the flask are missing by being accidentally washed out of the mould. The flasks are held under the jet of water by an iron tool with a handle so bent as to avoid the chance of scalding the workman's fingers, and with two claws which grip the bottom of the flask, so that the flask and its contents can be turned in any direction without the risk of a fall, either from the difficulty of holding the flask with a pair of pliers, or in a hand protected by a cloth, the heat from the flask or the water being rather painful and attended with risk of a burn or a scald. A few nail brushes, tooth brushes, pieces of pumice, soap and a scrubbing brush complete the outfit in this place, and close at hand are linen rollers for wiping the hands upon, while a small piece of looking glass, set up at an advantageous angle, often furnishes a useful hint as to the condition of one's personal appearance. The polishing lathe is, as I have already explained, placed next the wash-hand basin and its water tap, in order to save time walking from the lathe to the water tap when polishing is on hand. This lathe is driven by a heavy fly-wheel on the same pattern of cast-iron standard as the grinding lathes already referred to. The lathe-head is of a cheap American pattern, made of malleable cast iron which has been four years in use without appreciable sign of wear, and on the screw threaded mandrel can be



set polishing brushes, scratch brushes, or felt cones. Felt as a polishing material, though extensively used in the arts and manufactures, is not so much used in the dental workroom as it ought to be, and the rapidity with which a polished surface can be produced with suitable buffs of this kind, is in marked contrast to the time and trouble that the use of brushes involve.

At the same time felt buffs, or cones, have the great advantage of absorbing the polishing powders in their substance, and do not raise a dust, or so readily heat the vulcanite when high speed is used, as brushes. Felt buffs, when charged with pumice, and used with soap and cold water, smooth a surface as quickly as sand paper. These buffs can be made either in the form of cones or of discs, and it is well to have two or three shapes, both blunt and sharp pointed, so that any kind of surface can be polished. Next to this polishing lathe a work place is made in the bench, where hard vulcanite, after it has been taken from the flask, can be trimmed, filed and scraped ready for the buffs. This bench is fitted with a skin and bench pin, similar to those that I have mentioned in the gold benches, and has also a fixed seat. Across the window lighting this bench, a piece of wood is fitted, set at an angle of 45 degrees, in order that it may not cast a shadow on the bench, and it holds in a rack the carving tools necessary for finishing the vulcanite. On the right hand side of the rack a number of wire nails have been placed, the heads of which have been filed off ; these pegs or pins are useful for holding the polishing brushes, felt buffs and cones, so as to be easy of access, and at the same time secure each article in its proper place. In connection with the polishing lathe there is a box arrangement, with a glass top and back to it, within which the polishing brush revolves so as to catch the splashing caused by the centrifugal force of the brushes. This box has a bottom in which can be placed a saucer containing polishing powder, and on the end of it, next the workman, is a broad piece of wood on which his wrists can rest firmly while polishing work.

This piece of wood is raised a sufficient height to admit of great freedom of motion in the hands and fingers, while at the same time the chances of a sudden shock to the work is reduced to a minimum. That is to say, the work can be manipulated in contact with the polishing brush, without the exercise of much force ; as the weight of the workman's hand is already supported by the hand-rest above mentioned. The common method of polishing vulcanite with the workman's wrists unsupported is undesirable, a sudden grip from the wheel, or the wheel incautiously approached, is liable to dash the work out of the workman's fingers, and a denture that has already cost time and trouble in bringing it to this stage is not infrequently rendered perfectly useless. It is surprising, when one comes to think of it, how commonly the polishing of a piece of work is handed over to the most inexperienced and junior hand in the establishment, because the process of polishing, as it is usually conducted, is considered messy. There is no reason why polishing should not be considered as skilful a process as striking a plate, or grinding a tooth, and all the more so when we reflect that the polishing process is the last one a denture has to undergo, before it is fitted in the mouth of a patient. To any dentist who takes a personal pride in the fit and appearance of his work, on which he has already expended some thought and trouble, it must be galling to find the fastenings bent or opened, and perhaps the plate with a set in it, from careless handling during this process. Polishing should therefore be looked upon as a fine-art-accomplishment of a good workman, rather than the most convenient way of breaking in the juniors to a practical knowledge of dental mechanics.

TEETH GROWING FROM PERSISTENT PULPS,

By J. Sim Wallace, B.Sc., M.B., C.M.

Although the study of teeth growing from persistent pulps is not directly of practical importance to us as dentists, yet it may to a certain extent influence our modes of setting artificial teeth when we consider certain mechanical principles which it involves.

Teeth of persistent growth are put to several different uses, their mode and depth of implantation often indicating what these uses are. Thus when the tooth is straight with a relatively short implantation, we should expect it to be used for piercing in the line of the axis of the tooth, and not put to uses involving any lateral strain. This is exemplified in the tusk of the male narwhal.

When the tooth is curved with a relatively long implantion, we observe that it is put to uses involving strain lateral to the long axis of the tooth. The curvature may be either to save an excessive development of bone for the necessarily deeply implanted part, or for special power of resistance to strain in one particular direction. As an example of this latter may be taken teeth not used in mastication, but projecting from the mouth. The uses to which they are put are such that the strain falls on the end of the tooth in the direction continuous with the curved segment of the circle which the teeth describe, for example, the canines of the walrus.

The curvature of rodent's incisors is principally for the purpose of allowing deep implantation without any special development of bone. I know that it is generally said that the curvature of the rodent's incisors is to prevent undue pressure on the actively growing pulp, but this I firmly believe is not the reason at all. In the first place, many teeth of persistent growth really liable to great pressure and sudden jerks, such as one might expect could do harm to the growing pulps, are not curved, as is well exemplified in the incisor teeth of the hippopotamus. Again the growing pulps of all teeth, whether of persistent growth or otherwise, appear to have specially great vitality. No bad effects seem to arise from the sudden jars which the molars in the human mouth are liable to while the pulp is still actively growing, and the tooth is only slightly supported by the alveolar dental periosteum.

Lastly, considering the direction of the free ends of the rodent's incisors, the arrangements of the muscles and manner of mastication, it would be quite impossible for a rodent to make great pressure on its own teeth. The true reason why the incisors of the rodent are so deeply implanted is to prevent antero-posterior displacement in the ordinary uses to which they are put. If the implantation were not deep this displacement would be liable to occur, and the teeth would act like a pair of scissors with a loose joint. Now, assuming, as we may, the necessity of the deep implantation of such teeth, were there no curvature there would require to be an extraordinarily awkward projection of bone for their implantation, giving an appearance almost as grotesque as the idea that the curvature is simply for the purpose of preventing undue pressure on the growing pulp.

Another advantage which might be claimed for the curved shape of the rodent's incisor is that the lingual side of the tooth, describing an arc of a smaller circle than the labial, less substance requires to be ground off it to retain the chisel-shaped edge.

This subject deserves our special attention, bearing as it does more or less directly on the setting of teeth for strength in mastication with economy of space.

THE NECESSITY FOR SYSTEMATIC AND PERIODICAL EXAMINATION OF THE TEETH.*

By Mr. G. PRICE.

MR. PRESIDENT AND GENTLEMEN,

I fear I have taken a bold step, for one so young in experience, in choosing a subject such as the above, but the undoubted vital importance of it to us, as dental students, (the future generation of practitioners,) must be my excuse for putting it before your notice to-night.

Perhaps few of us realize how numerous are the diseases resulting from careless and inadequate dental treatment during youth, and it is for us, as dentists, to study the manifold advantages which will accrue from a system of periodical treatment, and to use all our influence to impress the great necessity for keeping the teeth in thorough condition, and under regular supervision during childhood and school-life, that in maturity they may be a blessing and not a bore. When this necessity is more thoroughly understood, the public will recognise that the province of the dental surgeon is preservation and not extraction, and that dentistry is a science and not a trade. Prevention is better than cure, says the proverb, and however tedious and unpleasant the duty, we must first most assiduously direct our attention to the treatment of teeth in youth, whereby disease may be nipped in the bud, and I submit that if cases be treated from childhood upwards, a result hitherto unapproached will be obtained, and we shall be indeed practising the science of dentistry. I should be the last to make comparison between English and American methods, but our American cousins, both dentists and patients, have us on the hip in this matter of periodical examination. I believe the system to be in regular working order among them, and acknowledged by all as thoroughly satisfactory and the most perfect mode of ensuring the best results in treatment. And why have they forestalled us in this matter? Is it not because our American *confrères* have impressed upon their patients, and they themselves have verified, the great advantages derived from visiting their dentist, whether the mouth be in a good state or in a bad one. The system of avoiding dental treatment until the teeth are painful, or in an altogether unbearable condition, seems to me entirely out of gear with the present advanced state of intellectual education, and I submit the sooner it is shown the door the better. The result is apparent to us all, for how unfrequently do we find, in persons of mature age, and especially among the male sex, a good or even presentable set of teeth. Again how few people know that many of the chronic diseases which make maturity so unhappy, are wholly and simply the result of mouth imperfectly and sometimes never attended to. I venture to think that, if this were more thoroughly understood there would be infinitely less disease and discomfort in later life, and certainly less miserable and decrepid old age. I submit, therefore, that we, as dentists, are in fault in not putting these facts before them, and so dispelling an ignorance which is most serious, and may be disastrous. Our duty does not terminate when the patient has left the surgery. We are, I consider quite as much under an obligation to impart knowledge as to how the teeth may be preserved from decay and loss, as to operate upon the mouth when these conditions have occurred. Let us, therefore, not be chary of giving advise which will enable our patients at least to keep their teeth in a clean and healthy state, and not to be satisfied with performing our operation and taking our fee. This matter of advice is a powerful ally to periodical examination, and depend upon it, if we evince a personal interest in cases under our care, we shall not lose by so doing, and it is obvious that those who attend us will go away not only more than satisfied, but with a very different idea of dentistry to that with which they came.

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* Read before the Students' Society, London Dental Hospital.

My subject then, divides itself into the method the dentist is himself to practise in bringing about this end, and the method of preservation he is to urge upon his patient to practise. A mouth, however well conditioned, will not remain in thorough order, unless under regular and periodical examination. Therefore our first effort must be to desire those who consult us, to make periodical visits that we may see that all is right, and the mouth healthy and properly looked after. I do not propose to lay down any fixed time for such visits, for as will presently be noticed, the many constitutional causes effecting various cases, would make it impossible to establish a rule ; every case must be treated on its own merits, and the discretion of the dentist decide how frequently the patient be seen. An illustration exemplifying the great need of such visits, will do more than any theoretical arguments I can bring forward. A patient, A— B—, came some months ago with several teeth so helplessly loose and decayed through masses of tartar, that extraction and the insertion of an artificial denture was the only possible treatment. Other teeth in other parts of the mouth had been filled some years before, and were in good preservation, and the patient was naturally asked how these loose teeth had been allowed to get into such a condition, seeing he had previously undergone dental treatment. His reply was characteristic, "I did not notice any accumulation of tartar till recently, and then did not think it would be harmful." It was also ascertained that this gentleman, though most particular of his appearance in other respects, seldom or never used a tooth-brush, and in consequence the treatment of the case was fraught with much unpleasantness and disgust to the operator. Now, had the necessity of having his teeth regularly cleaned and examined been pointed out to this patient in the first instance, this mischief would have been obviated, for such slight deposits of tartar as would then have been apparent would have been cleared away and the teeth kept healthy and sound. This case, gentlemen, is not an unique one; I fear it is only a type of what is daily met with in practice, and besides showing the responsibility which rests upon the dentist, seems to point to ignorance, and from ignorance, carelessness, as the only reason of such general indifference and laxity. A man of any self-respect does not leave his hair unkempt and his hands unwashed, and yet, this same man or if not he, many of his fellow countrymen never give their teeth a thought, except when suffering from them, and when at last, as they inevitably will be, they are driven to the dentist, they will tell us that they have been quite satisfied as long as they could eat and drink, and are astounded when they find out that the result of their carelessness is to be years of indigestion and dyspepsia. That the dentist does not take a sufficiently active part in dispelling this ignorance, is I fear too true, and it is necessary to shake off this apathy and to take the matter actively in hand. And the means by which we can alter this state of things is to remember, that besides the necessity of periodical visits, simple advice should be given to our patients. This cannot be too strongly emphasised, and I feel assured that if this is more universally practised, many to whom the dentist is a stranger will see their error, and go to him.

I will now ask you to consider a few of the benefits our patients will derive from regular attendance on their dentist. A visit will no longer be looked upon with horror and fear, but will become a pleasure, for less pain and discomfort will have to be borne. Again, knowing a visit to their dentist necessary and inevitable, they will be stimulated to aid his efforts by keeping their teeth in a more cleanly condition during the interim between these visits, and will gradually derive such comfort and pleasantness from a clean mouth that they will never again forget this duty. But the advantages which we as dentists shall derive are more striking still, and first among them is that our work would become less arduous and of a more cleanly character. We all know how disagreeable is working for a patient whose teeth are in bad condition, and it must be allowed that if teeth were periodically examined work, the bad condition would be much lessened. This in itself is a potent argument, but a greater advantage presents itself. It is that, by regularly having under examination the cases we have treated, there is opened to us a field of scientific examination which cannot be equalled. We can study the relative worths of different materials in the mouth, the value of various modes of treatment, and besides more easily ensuring for those who attend us the best and most permanent methods, we shall gain scientific experience without end. For example, various teeth in a mouth may be filled with amalgam of different preparation. If these can be seen regularly, the most serviceable under various conditions can easily be demonstrated, and we may be daily experimenting without loss of time, and with little trouble, and so amass a mine of knowledge impossible under other circumstances.

Having now endeavoured, in too small a space to do thorough justice, to put before you some of the necessities for, and advantages arising from a system of dental visits at stated intervals, I would draw your attention to the different methods likely to ensure, or at least to help tooth preservation when our patients are not in the surgery. I claim this to be quite as important a feature as that of attending the dentist, and you will, therefore, pardon me, if for reasons to be afterwards given, I here briefly enumerate some of the causes which predispose to dental disease, and which may serve as a guidance to its treatment, and also to help us to decide how long our patients can be away from us with impunity. That caries, which is the root of all dental evil, is hereditary, there can be little doubt, for authorities seem singularly unanimous on this point, and taking for basis the principles of evolution, it seems at least possible that the system which is the subject of this paper, if universally carried out, is the method by which this hereditary tendency will in time be stamped out. Again, comes a theory from such eminent observers as Magitôt, Kingsley, and others that excessive intellectual work during youth is strongly prone to result in dental disease, and an opinion from such authorities as these is one to be treated with every thought and consideration. This, of course, opens a wide field for discussion with regard to the lack of adequate dental treatment in schools and institutions of all kinds for the young, but is too extensive a subject to admit of a place in this paper, and it would be presumptuous in me, to discuss a matter which has for long past, and is still exercising the mind of one of the foremost dental societies. Suffice to say, that many young people are ruined, from a dental point of view, through the want of systematic dental attention during school life, whereas their mouths might be put in thorough order with little trouble, and certainly less pain than they will inevitably suffer in later life. Closely allied to this theory of decay is the remarkable fact that persons of mature age who are in the habit of doing considerable mental work, often find that acute pain is suffered from teeth, which though decayed, have not previously been troublesome. This fact seems the sequence of the foregoing theory, and an instance which may have this explanation occurs to me with a student at this hospital. Within a few months of his examination, for no apparent reason, a tooth, which had been quiescent for long enough, twice gave intense pain, and that within a few weeks. This is simply quoted as an interesting fact somewhat bearing out foregoing statements, but must not be taken as an expression of opinion one way or the other. Yet another cause said to predispose to dental disease is a nervous and over-excitable temperament, and may, perhaps, be accounted for by the fact that the more than usual action of the nerves brings about a general lowering of vitality and impoverishment of the tissues. However, this theory needs little verification ; it is sufficiently apparent if cases be examined.

My object in putting before you thus briefly some few of the causes of dental trouble has been to bring evidence to show that however thorough and systematic our treatment of cases may be when under our immediate supervision, unless advice be given to patients which will enable them to keep their teeth in good condition during their absence from us, all our trouble and careful endeavours will be of little avail.

This then brings me to, perhaps, the most necessary part of my paper, viz., the need of impressing our consultants to practice a system of periodical dentistry for themselves, in regular and daily cleaning of the teeth, the vast importance of which a great many people entirely overlook, both in themselves and in their children ; and our first effort must be to dispel some of those popular fallacies which are so prevalent with regard to this simple duty. I think you will agree with me that, at least a great number of those who *do* pay attention to their teeth by cleaning them, do so, without any idea of the preservative effect that is produced, but in order that personal appearance may be enhanced by the process. This is especially exemplified among children, for there can be little doubt that many mothers insist upon their children cleaning their teeth for this and no other reason. The fallacy of the notion that the teeth should be cleaned to make them look white is to us of course apparent, and we shall do well to point it out to our patients, when urging them to assist our efforts by systematic brushing, for the result of tooth cleaning under this mistaken idea, is very frequently that on attainment to manhood and womanhood, the duty is gradually left off and finally forgotten, and the last state is worse than the first. In mature life, also, this same laxity is more commonly noticeable in men, for, though it is generally agreed that caries is more frequent in the female than in the male, yet the latter (due no doubt to the partial covering of the mouth by a moustache and the consequent hiding of the teeth), is more careless in dental matters than is the former. The point now arises, when and how shall the teeth be cleaned, and I think it will be well for some of us here present to thoroughly digest and act upon the maxim to be laid down. Perhaps the greatest blunder that many of us fall into, and I must include myself in the number, is that the proper time for cleaning the teeth is in the morning, for I find that out of some sixty students at this hospital little more than a third use their toothbrush at any other time. Most distinctly, then, the all important time for the use of the toothbrush is at night before retiring, and the necessity for cleaning at any other time, though, of course most advisable and proper, is quite secondary. The teeth have been at work throughout the day, and particles of food perhaps imperceptible to us, have become lodged in and about them. Let them remain while asleep, when the body is inactive, and every condition necessary to putrefaction, and the culture of micro-organisms is present. Let me impress upon you therefore, and ask you also, to impress upon your patients the great importance of cleaning the teeth at night.

The great want of proper advice regard this matter of the use of the tooth brush, has been brought forcibly before me in some statistics I have prepared showing the proportion of children between certain ages who regularly clean their teeth, and before reading them, I wish to tender my thanks to one or two gentlemen who have kindly aided me in procuring them, thus affording a wider field of investigation. To proceed, I find that out of 1680 children between the ages of nine and fourteen years, 642 have tooth brushes, sixty-seven use them every day, while of the remainder 403 use them occasionally, thus giving a percentage of 27·9. The statistics of the various schools and sexes of the children, will be found in tabular form at the end of this paper, and it may be interesting to know that these numbers have been gathered from schools of children in respectable positions, both in London and the provinces, and I think them to be as correct as it is possible for such things to be. The result of them is no doubt startling, but I fear that in whatever sphere of school life we look, be it high or low, rich or poor, elementary or secondary, little difference of results will be found.

The method of using the tooth brush is familiar to all of us, and I will not waste time in describing it, but I may be permitted to remark that I have found a brush with a rounded handle, to greatly facilitate rotatory movement so necessary to ensure thorough cleansing.

Another idea still very common at the present time, though happily fast losing ground, and which needs dispersement, is that, if the gums bleed during cleaning the process should be stopped. As we all know, the greater is the reason for thoroughly brushing the teeth at such an occurrence, except of course in patients of hæmorrhagic diathesis. Besides explaining this fact to our patients, simple instructions should be given as to the preparation and use of a boracic mouth-wash, and the trouble obviated without need of further professional treatment.

My last point, gentlemen, is one of considerable importance, as being very frequently overlooked. Indeed, it may be thought by some to be hardly within the dentist's province, but I have recently been so struck with the ignorance evinced with regard to it, that I beg leave to give it brief mention. It is that patients should be impressed, that in cases of sickness a great necessity arises for allowing the sufferer to regularly rinse the month with water, and if possible to use a soft tooth brush. This may seem of trivial importance to many but to a person who is ill, nothing can be more comforting and refreshing than to be allowed the use of the tooth brush. Apart from this, it is very useful and necessary from an antiseptic point of view, and is it not possible that the breaking down of the teeth which frequently follows certain classes of diseases may be retarded by attention to this very simple duty, for it is generally held that this form of decay is induced by acid secretions in the saliva, and the use of a tooth brush and water alone, would certainly seem to minimise the formation of such destroying elements. I had intended to put forward a few of the advantages this system of periodical examination has in the matter of irregularity, inasmuch as timely and judicious extraction of temporary teeth may frequently prevent unsightly appearance in their successors, but time will not permit, and I must bring my remarks to a close. I have endeavoured to impress upon you the need of regularly examining our various cases, and the necessity of inducing our patients to help us and themselves, by attention to a few simple duties not generally realized, and now, gentlemen, let us remember that it is for us to put such a system into practice, and in doing so, let us not be disheartened by little failures, but keep before us that we are but pioneers, and that as " Rome was not built in a day," neither is a system of periodical examination of the teeth to be brought about without trouble and mistake. I thank you for your attention to my paper, and if any remarks of mine will stimulate those here present to put into practice the precepts I have endeavoured to lay before you, I shall feel that I have written to some practical purpose and not in vain.

CHILDREN, age 8 to 15 years.		No. who have a Toothbrush.	No. who use it.		Total Used.	PERCENTAGE.		
SEX.	NUMBER.		Daily.	Occas.		Daily.	Occas.	Total.
Boys ..	360	83	4	49	53	1·0	11·0	14·0
Boys ..	350	176	25	125	150	7·0	35·9	42·0
Boys ..	70	40	1	28	29	1·4	40·0	40·1
	780	299	30	202	232	3·8	25·9	29·8
Girls ..	300	86	5	26	31	1·6	8·6	10·0
Girls ..	450	177	30	140	170	6·6	31·0	39·0
Girls ..	150	80	2	35	37	1·3	23·3	24·0
	900	343	37	201	238	4·1	22·3	26·4
Grand Total	1680	642	67	403	470	3·9	23·9	27·9

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE ORDINARY MONTHLY MEETING of the above Society was held on the 7th inst. Mr. J. Howard Mummery, M.R.S.C., L.D.S.Eng., the President, was in the chair, supported by a good attendance of members. The minutes of the previous meeting having been read and confirmed, the following gentlemen signed the obligation book, and were admitted into Membership of the Society :—Dr. E. W. Roughton, Mr. Percy Smith, Mr. M. Y. Woolf, L.D.S.Eng.

The following gentlemen were ballotted for, and duly elected Members of the Society :—Robert C. Waller, of Cairo, E. J. Blaaberg, L.D.S.Eng., T. Garland Wrighton, L.D.S.Eng., Geo. Hern, L.D.S.Eng., Percy L. Webster, L.D.S.Eng., Harry Arthur Forsyth, L.D.S.Eng., Montague Frank Hobson, L.D.S.Eng., F. H. Ellwood, L.D.S.I., Walter S. Holford, L.D.S.Eng., Arthur Reginald Colyer, M.R.C.S., L.D.S.Eng., and E. Balding, L.D.S.

The LIBRARIAN (Mr. ASHLEY GIBBINGS) reported the receipt of several books, including a paper by Sir John Tomes, originally published thirty-five years ago, and reprinted in the "Quarterly Journal of Science."

The CURATOR (Mr. STORER BENNETT) announced three donations to the museum.

Mr. NEWLAND-PEDLEY showed a dry specimen of a sequestrum from the buccal surface of the alveolar process, in which a gold filling had been inserted, and said that since the last meeting of the Society, a patient came to him complaining of a very unpleasant discharge from a small hole in the gum, she said that it began as a gum-boil over the root of the molar tooth. She consulted a west-end dentist in large practice, holding numerous diplomas, and after examination he inserted a gold filling in the hole—this gentleman had great faith in gold fillings in all cases! Mr. Pedley removed the sequestrum with the filling *in situ*.

Mr. W. A. MAGGS asked how long the filling remained there ; it was apparently not that which caused the necrosis.

Mr. NEWLAND-PEDLEY replied that the filling was done fifteen months ago, and in a spirit of charity, which it was hard to extend towards the operator, he tried to believe that the bone was necrosed, but seeing that a solid hard filling was made requiring resistance and force, it was difficult to think so.

Mr. R. H. Woodhouse asked if Mr. Pedley happened to know whether the adjoining teeth were dead ?

Mr. Newland-Pedley stated that the teeth on neither side were dead, he had seen the patient only that day, and found that the dentist had drilled in between the roots.

Mr. E. W. Roughton read notes on a case of sarcoma of the hard palate. The patient when first seen had a smooth, hard, but elastic swelling attached apparently to the periosteum of the hard palate. Mr. Fisk saw him, and appreciating the gravity of the case, transferred him to the care of Mr. Roughton, who, on examination, found that an operation would be necessary. He accordingly made an incision over the tumour, which shelled out. The palate was then discovered to be perforated, necessitating the removal of the left and a portion of the right side, so that the whole of the disease might be eradicated. The patient recovered from the operation, and in six days was well enough to leave his bed, on the 12th day, however, for no discoverable reason, the temperature went up to 103°, reaching 105° on the 13th day, when he died. Necropsy throwing no light on the matter, death was attributed to influenza.

Mr. Sidney Spokes concurred with Mr. Roughton as to the importance of dentists recognising conditions of the mouth not properly within their province, and narrated the case of a man who came to him for the extraction of a lower molar. He presented certain symptoms, and Mr. Spokes diagnosed epithelioma so advanced that the surgeon refused to operate. The patient discovered nothing for himself, and circumstances only came to light when the disease had gone too far to be dealt with.

Mr. Corneilus Robbins showed a simple and ingenious contrivance which had been made to his instructions by the Dental Manufacturing Company for heating gutta-percha. It could be easily fixed to the shield of any spirit lamp, and was much more convenient than Flagg's G. P. heater ; it was not advisable to fill it more than two-thirds full of water, and was easiest filled with a syringe.

Mr. George Brunton, of Leeds, showed a small apparatus which he had used for about six months for keeping hot pellets of Japanese paper. It consisted of a small oven jacketed with water, and kept hot by a spirit lamp. He found in practice that only 1 oz. of water evaporated in eight hours. There were two compartments, the top for heating gutta-percha, and the other for "Flagg's High Heat," he also found it useful as a vaporizer.

The PRESIDENT said that as they had no promise of a regular paper, it was proposed to have a discussion on irregularities, associated with anterior protrusion of the upper teeth. Several gentlemen had offered to speak, and Mr. David Hepburn had kindly undertaken to open the subject. As it was a very wide one, it would be necessary to strictly confine the discussion to those associated with the anterior protrusion of the upper teeth.

Mr. DAVID HEPBURN, in opening the discussion, said that he desired to direct attention to two points, viz : the occasional uncertainty of treatment, and the tendency of nature in certain cases to modify abnormal conditions of protrusion, and, as far as possible, to confine himself to cases of abnormal deposit of bone in the pre-maxillary region, free from mechanical influences (such as thumb-sucking) or the impingement of antagonizing teeth, both of which doubtless intensified protrusion where the tendency for its development existed. He wished, however, to refer to that distinct class which had its origin in some propensity in the individual to excessive development of osseous tissue ; where the lower incisors never had, and never could, come in contact with the posterior surfaces of their natural opponents in the upper jaw, and where even direct force applied through the mucous membrane and alveolus could not be credited with aiding towards deformity. The appearances characteristic of the deformity were too well known to need description. As to the etiology of the condition, he thought they had much to learn ; the difficulty even of obtaining dry specimens was so great that the possibilities of research in this direction were limited. Notwithstanding statements sometimes made to the contrary, Mr. Hepburn's experience pointed to the frequent influence of heredity. In the models (shown) he had been able to recognise in the parents' condition which would be likely to descend in the form of anterior protrusion in the children. It was singular that no marked peculiarity distinguished the temporary dentition, but he inclined to associate the narrow and abnormally deep temporary alveolus with the probability of protrusion when the permanent teeth were erupted. Excessive proliferation of bone cells about the time of the eruption of the anterior permanent teeth in the upper jaw would give them an oblique direction in the first instance, and which would become more marked as eruption progressed, and once established, continued and excessive growth of the alveolus would take place; the teeth would be carried with it sometimes only to the extent that the lower incisors impinged at the necks of the superior teeth, but sometimes the abnormal growth might be so great that the superior incisors and concomitant alveolus would protrude in an unsightly way an inch or so in advance of the normal arch. The teeth might have more than sufficient room, and apart from their undue prominence, be erupted in a regular arch, or they might be crowded and irregular; but this Mr. Hepburn regarded rather as an accidental condition, due possibly to the extreme size of the organs or irregularities in the position of their "crypts" prior to eruption. This condition would considerably complicate treatment.

With reference to the assistance given by nature in modifying deformity, he thought that under certain conditions much help was obtained from this source. With the complete eruption of the incisors, providing there is no undue pressure from the advancing bicuspids and molars, he inclined strongly to the opinion that the deformity had reached its greatest development, and that if the teeth had but room they will improve in position rather than grow worse The natural increase in length of the molars and bicuspids, and the muscular action of the upper lip were most important means of bringing about an improvement. In addition, the facial bones and superfacent muscles increased and dwarfed, as it were, the deformity to such an extent, that with the other agencies alluded to at work, an unsightly child, without mechanical or surgical interference, might develop into a presentable adult. These facts pointed to the importance of judicious treatment, and the recognition of the physiological changes which the alveolus might undergo. Finally the density of the osseous tissues, the position of the apices of the roots of offending teeth, and firmly established conditions of inheritance would assist in forming a prognosis as to what extent treatment, if adopted, might be successful in its ultimate results. Mr. Hepburn showed and described a series of models, practically illustrating the points to which he had referred.

Mr. WOODHOUSE said he should have been glad to hear of the means which Mr. Hepburn used when he employed mechanical force, in his (Mr. Woodhouse's) own time he had used various forms of force, and had now come down to using elastic gold springs; these were first introduced to him by the father of their President.

As to leaving matters to nature he entirely agreed with Mr. Hepburn that nature did very much of herself, but he thought that they should aid her, his own experience was that if they left the jaws to close naturally, the bite would be too short. The mode he adopted, was to cover the six-year-old molars with a plate, and allow the twelve-year-old molars to grow, in that way he had obtained very marked results, and had been enabled to treat cases which would otherwise have been impossible to treat where the lower had impinged on the upper incisors. He showed a model of a case in connection with which there was no history of hereditary protrusion. It had at first appeared hopeless. The protrusion of the teeth entirely disfigured the mouth, and the lower incisors impinged about $\frac{1}{16}$ of an inch on the gums inside the tuberosity of the upper incisors. He capped the six-year-old molars and bicuspids, and allowed the twelve-year-old molars to grow, he then removed the first bicuspid in the lower, and the first bicuspid in the upper jaw, he used a vulcanite plate with gold springs to bring back the teeth. The case mentioned was treated in 1882, and the patient had at the present time a very presentable appearance, he had now arranged the teeth so that they did not impinge on the gum at all. He thought it very important not to attempt to bring back more than one or two teeth at a time, otherwise one would bring the jaw forward. It was also important to begin at the right age, he never began until the twelve-year-old molars had erupted, one was often importuned by anxious mothers to begin sooner, but he never did so. While on this subject he wished to bring before them a plan which he first adopted some years ago, but which had not been noticed so far as he was aware, it was known that when the first molar is taken out, if the twelve-year-old molar has been left to itself, it is extremely prone to come forward and occupy the place one did not want it to, to avoid this, it occurred to him some years ago to make a plate, such as represented on the model shown, resting more or less on the upper incisors—it should rest on the four if possible—but in this case it rested on the two central ones, and fitted to the inside of the second molar. In making a case of this kind, he carefully trimmed up the model himself, not leaving it to an assistant, as it required to be done very nicely, so that the plate catches in the neck of the tooth. From the plate, flattened pin-wire goes round and grips the tooth very nicely indeed. As one treated the upper so should the lower be treated, but the lower bicuspids had a much greater tendency to retract than the upper.

Mr. Walter Coffin felt the impossibilty of adding to Mr. Hepburn's remarks as to the etiology of the pathological conditions met with in the protrusion of the superior teeth, but was sure that the stress laid upon various forms of infantile suction, by Mr. Quinby and Mr. Chandler were not now much considered. Mr. Coffin would like to say how strongly he felt with Mr. Hepburn as to the tendency of many cases in children to improve in the course of time, and he had hoped that some agreement more or less might be come to among the members of the profession on this point, in order that when one was pressed by parents to commence work too early one might feel that one had the support of his professional brethren in resisting these importunities. Mr. Woodhouse had showed them how the mechanical appliances must be governed by very careful consideration in order that they might do good instead of harm ; of course it was not necessary to say that plates capping all the posterior teeth did more harm than good ; possibly these mechanical contrivances might not accomplish more than waiting policy, but at the same time in waiting for things to improve much one was often disappointed. Mr. Coffin had a case of his own in his mind of a girl aged 19, in which the deformity had not improved to any appreciable extent, and then he was called upon to treat the case and had felt justified in doing so ; the case was complicated by the fact that the lower teeth impinged on the lingual surfaces of the gums, and one had to raise the bite artificially, and in a careful way, which would insure a permanent opening of the bite in the manner which Mr. Woodhouse had pointed out, in this case the teeth were bought back, and there was never difficulty in obtaining this result, although the permanency of it which was a matter of doubt, in this case the patient wore a plate for 7 or 8 years, she was now a woman of 30, and there had been no tendency for the front teeth to resume their former position. He attributed this to the same cause which produced spontaneous improvement. Wearing a plate long enough seemed to ensure a successful result. He thought something more might be said upon the discrimination and classification of cases. They saw cases of very slight spaces between the front teeth, in others there were no spaces, then they saw cases were the lower teeth impinged and where they did not, and these cases must be considered each in the light of their special circumstances. He did not think that much could be added to what had been said except that he hoped some middle ground might be found between those who thought it was very rarely possible to assist nature, and those who thought it was well to commence treatment when the twelve-year-old molars had erupted. As to mechanical contrivances he felt sure that most practitioners had arrived at the conclusion that elastic ligature, india-rubber bands, and such more or less unstable appliances did more harm than good, and that unless the contrivance could be a plate which could be self-contained, rigid, not easily put out of order, it would be better not to do anything at all; he felt sure that many must have been disheartened and disinclined from experience to fall back upon easy contrivances. These cases were undoubtedly those which gave the greatest anxiety and embarrassment both in advising patients, and making up their own minds in following a course of treatment. In deciding between the two schools it was certainly very difficult to say to the young practitioner who had used his plates that equally good results would have come about without the plates, it was extremely difficult to say how much had been due to the plates and how much to the working of nature, he thought that if they studied the construction of plates very carefully they would see that they might make plates which if not actually assisting Nature would not hinder her; they must all have seen plates which they were obliged to condemn, and he thought that the limitation to this point of regulation was a very great advance in the discussion as to the desirability of attempting any mechanical amelioration of conditions.

Mr. **George Brunton** exhibited a model showing the protusion of the teeth before treatment. The six-year-old molars were removed and an expanding plate was inserted. After the jaw was sufficiently expanded all the upper nine teeth were drawn back simultaneously by one apparatus. He not being able to find the apparatus he was unable to show it. The tendency of the twelve-year-old molars to tip inwardly towards the tongue resulting in a bad articulation would often have been noticed; of course that was due to their coming forward, but could any gentleman suggest a remedy? or suggest at what age the six-year-old molars should be taken out? One thing struck him in the case Mr. Woodhouse was good enough to show, and that was how did the upper teeth thus travel back without the bite being "jumped" as it is called, because one would think that the articulation of the lower teeth would prevent the upper teeth from "jumping" back.

Mr. **Morton Smale** asked what kind of apparatus it was which Mr. Brunton used to draw back the nine teeth simultaneously?

Mr. **Brunton** replied that the arch was expanded first of all on a split plate and afterwards a vulcanite plate was made to fit the upper-extending as far back as the twelve-year-old molars, wires were attached to the plate coming in front of the first and second bicuspids these wires being bent in from time to time drew back the teeth.

Mr. A. J. WOODHOUSE feared that he had not made himself sufficiently clear when speaking of the effect produced when the first molar was removed in the lower jaw as well as the upper jaw—the lower jaw moved much more readily and required no treatment, it moved without any assistance from a plate.

Replying to a question from Mr. Lawrence Read, Mr. WOODHOUSE said that when he wanted to raise the twelve-year-old molars he put a plate on the first molars and bicuspids which kept the mouth open, the twelve-year-old molars then began to grow down.

Mr. STORER BENNETT remarked that a good deal of what he should liked to have said had been robbed of the principle part of its value because he had brought down models which he had hoped to see upon the screen, but unfortunately they could not be successfully produced ; it would have been much more interesting because they would all have been able to see the models and better appreciate the points under discussion. With regard to heredity, of course they must all recognise that as being a very important factor in these cases. He had models of two brothers and a sister aged 10, 11, and 12 years old respectively, and a model also of a case which was a typical one because it illustrated a point which had not been touched upon, and which he thought had a considerable influence on the unfavourable progress of these cases, viz :—the drop of the lower lip between the two sets of incisor teeth, this drop tended to force back the lower incisors and out the uppers. Of course the upper lip ought to have a sufficient counteracting influence but it would be noticed in all these cases it was very short and instead of helping to keep the teeth in their natural position the pressure was principally on the roots instead of the crowns. Mr. Hepburn was certainly to be congratulated on the very successful treatment of the cases in which time and nature were left to do the work, but he did not think that, the experience of many of them would bear out the assumption that this course might be relied upon in anything like the majority of cases. That case in which he had pointed out that the permanent teeth had risen considerably higher than the temporary molars, he (Mr. Bennett) thought was misleading, it was only fair to assume that not only did the temporary molars but also the incisors increased in length and from the obliquity of the upper incisors, the deformity must increase also. With regard to the treatment of those cases, Mr. Coffin was very much down on the use of rubber-dam, and rubber-rings, but there was an instance of its utility when by putting a band of rubber-dam across the upper incisor teeth for the purpose not only of drawing them in, but making an apron which dropped behind the lower lip so that it should no longer influence the incisors at all.

The SECRETARY read a letter from Mr. J. C. Storey, of Hull.

Mr. R. H. WOODHOUSE said that the discussion had turned on bilateral protrusion of front teeth, but there was one form, viz :—unilateral protrusion which was very troublesome, it was generally associated with the central and lateral incisors on the right side of the upper jaw, and was most frequent in adult life. He had had several cases himself, but did not know of any successful way of treating them. He had found in a few cases that a good effect had been produced by lessening the length of the central incisors. That this irregularity should be more frequently seen in the right side of the upper jaw was rather a puzzle. Many cases which he had in his mind at the moment were he thought, without exception, on the right side ; it had struck him that possibly this might be produced by the action of the tongue, which he believed follows the movement of the jaw, for from careful observation it would be noticed that the jaw moved in one direction when masticating, viz :—from left to right, and the tongue participated in this movement, this tended to exaggerate the protrusion of the incisors to which he had been referring, he did not know that there was any successful method of treatment in these cases, but he thought it was worth mentioning.

Mr. W. HERN said, that there was one case of protrusion occurring not so much in youth as in young adult or in adult life, in which the patient comes and complains that his or her teeth are becoming more and more prominent, and on looking at these cases they found that this state of things was due to pyorrhœa alveolaris, more on the lingual and less on the labial surface, it appeared that chronic congestion tended to throw the teeth forward. He would like to say, that his experience small though it was, confirmed what Mr. Hepburn said as to nature working the cure. A relative of his own had protrusion of the front teeth, which had become very much less marked as she grew older, he thought that it might be explained to some extent in this way, that when the child got old enough to have any regard for its personal appearance it tried to cover up the deformity, thereby throwing a stress on the upper incisors and tending to throw them back. Before sitting down he should mention that Dr. Talbot, an American writer, had written largely on the subject, and he thought his classification was very good.

Mr. BETTS thought that no one had alluded to the method of using a flat wire that had a screw and nut at the side. He had come to the conclusion that in the majority of cases a piece of flattened wire, with a screw and nut, so that the child with a turn of the screw from day to day could keep the pressure constant.

Mr. S. J. HUTCHINSON said that the lower incisors should be capped as well as the bicuspids and first molar, as this, while allowing the twelve-year-old molar to rise, also obviated the necessity of the step Mr. Betts had recommended, viz., grinding down the lower incisors.

Mr. W. H. COFFIN said that by using an axial force to draw back the incisors it was comparatively a simple matter to push up the incisors into their sockets when they seemed too long.

Mr. HARRY BALDWIN had found a band of rubber dam used as a strip and buttoned on to the plate useful, not only as a means of pulling the teeth back but also to push them into their sockets and so prevent their lengthening, by bringing them from an oblique to a vertical position. He deprecated extracting the six-year-old molar unless it were carious or excessively long, or had its pulp exposed, and gave besides the usual reasons the additional one that if you extract it you remove a far more powerful support to the bite than was constituted by the bicuspid. It the bicuspid were extracted this risk was not run.

The usual votes of thanks closed the meeting.

Students' Society, London Dental Hospital.

ORDINARY GENERAL MEETING, held February 8th, 1892, W. B. Paterson, Esq., President in the chair. The minutes of the previous meeting were read and confirmed.

Mr. Wright was proposed as a member by Mr. Gabell, and seconded by Mr. C. Gardner.

The PRESIDENT announced that owing to preparation of blocks in illustration of Mr. Herschell's paper, the transactions would not be distributed at this meeting.

On casual communications being called for, Mr. DOLAMORE showed a beautiful specimen of Chinese carving in ivory, and stated that although work in this material was out of date in the dental profession, yet it was at the same time very interesting from an art point of view. He also showed some Chinese paintings, one of which had as a subject, a man undergoing the operation of "jaw smashing"; another quaint object was a *menu* of a dinner, held by the Dental Students of Edinburgh, which he presented to the Society.

Mr. E. GARDNER showed a plaster model of a mouth of a patient aged 27 years with both laterals missing, and the temporary canines situated between the permanent canines and first bicuspids ; he also showed several teeth he had extracted, viz. : Second upper molars, having all the roots considerably fused together, remarking that this condition would be a source of trouble to the operator in the process of root filling ; and a three-rooted second upper bicuspid.

Mr. MOSELY also brought forward a second upper bicuspid with three roots.

Mr. HANKEY described a specimen he had, having two supernumerary centrals, which were preventing the proper eruption of the permanent centrals in the normal arch.

The PRESIDENT also mentioned a similar case, of molariform supernumeraries of the type and position shown in the front of the mouth, and stated further that the patient had inflamed conjunctivæ, which did not yield to ordinary ophthalmic treatment after three or four weeks' trial, and it was not until the offending teeth were extracted, that the inflammation disappeared.

The PRESIDENT then called upon Mr. Price to read his paper upon "The Necessity for a Systematic and Periodical Examination of the Teeth." (See page 162).

The discussion was then opened by Mr. NORTHCROFT, who said that he did not think that it was a pleasure to visit the dentist, although he agreed that if a patient visited a dentist periodically, small cavities would be discovered and filled, and thus avoid the pain of excavation and cutting out of a large cavity at a future date. On the subject of caries, he thought the conditions of civilization had a good deal to do with the deterioration of teeth ; he mentioned a case in which he thought that great trouble and anxiety had brought about the destruction of a great number of the teeth in a patients' mouth.

Mr. HANKEY observed that the writer of the paper had not stated that in the cleansing of the teeth, the tooth brush should be used up and down as well as across the teeth.

Mr. GILLET asked if the influenza had anything to do with caries in the teeth, as he had heard of it happening frequently in patients after attacks.

Mr. PREEDY pointed out that Mr. Price must not think that the Americans were the first to practice this systematic treatment of seeing patients periodically, as he knew of several dentists who advised their patients to follow this course for some considerable time ; he mentioned that the tooth brush was not all sufficient to clean the teeth with, and advised that patients should be instructed to pass to and fro between the teeth pieces of silk, and in this manner remove food and mucus which had collected. He thought that if this system of tooth cleanliness was always carried out, caries in the teeth in the majority of cases would be prevented.

Mr. E. GARDNER observed that now in many large schools, the pupils regularly visited the local dentists, and that at some, dentists were appointed.

Mr. ASHBY mentioned casually that in the case of patients with tender gums, soft tooth brushes should be recommended.

MR. DOLAMORE believed that the Americans did devote more attention to their teeth and to visiting their dentists, probably because they were a wealthier race of people, and to some extent it might be accounted for by the fact of immense numbers of dentists practising in the States. In Chicago, he understood it had been calculated that one dental office existed for every 200 inhabitants. He thought that Dr. Harlan's method of writing periodically to his patients to let them know that it was time that they had their teeth examined, a very good one, and one that might be copied with advantage in this country to the benefit of the patients. He strongly advised that children not only at the age of six, but under, should be brought to the dentist and have what small cavities there were filled with soft or plastic fillings before they gave pain, and in this way children would think it rather a pleasure to visit him than other wise. He also counselled a playful manner in dealing with such patients.

The PRESIDENT drew attention to the time, but on the proposal of Mr. Dolamore, seconded by Mr. Moseley, the meeting was prolonged.

The PRESIDENT asked Mr. Price whether the statistics had been collected by himself, or were introduced in the form of quotations.

Mr. PRICE replied that they were the results of his own observations.

The President then suggested that they might probably be found a valuable addition to certain statistical work in a similar direction at present being carried out by the British Dental Association, and that he should be happy to communicate them, if he had the reader of the paper and the Society's permission to do so. With the matters contained in the paper and referred to in the discussion he expressed a general agreement. Much depended upon the practitioner he considered in the establishment of relations between patient and operator leading to regular and proper periodical visits. To that end a gentle use of instruments would need to be combined with skill and manual dexterity to allay the fears of many and create the necessary confidence. With certain classes of patients, doubtless the thought of pecuniary expense weighed heavily, hence the need for the exercise of a judicious consideration in making fees of a character which while properly compensating the operator according to professional custom, should not bear too hardly on the patient, and as children had been frequently alluded to, particularly in the cases of large families with none too large incomes. With regard to the daily care of teeth much was to be desired, as the author and speakers had shown. The "heathen Chinee" who had carved the pretty ivory specimens sent round earlier in the evening, could doubtless, were he alive, set us all an excellent example in regular tooth cleaning. It was curious to note how assiduous savage races were in the case of their teeth ; and in the most central parts of Africa penetrated recently by Mr. Stanley amongst people who had never seen white men before, the use of the "tooth-pick" was found to be a most constant and important daily function with one and all, as well as in very frequent request. Doubtless the evening use of the tooth brush was more important than the morning, and particularly so in those who with crowded arches and irregularly formed teeth, indulged in suppers containing much starchy food. He did not personally approve of Dr. Harlan's method as applied to cases in general.

The President then called upon Mr. Price to reply.

In reply Mr. Price said, I quite agree with Mr. Northcroft that some at least of those who do not regularly examine their cases, are actuated by an unwillingness to see their work again, but such a motive must not deter us ; it should rather make us more careful and particular in operation. Mr. Northcroft's case of caries so precipitately brought on, seems to bear out the fact mentioned in the paper, that many people under nervous strain are prone to both decay and pain from the teeth. Some misapprehension seems to have arisen in questions regarding the method of tooth cleaning. It was not intended to include the ways and means necessary for this duty, the few remarks on the point being mentioned to show what a powerful and necessary attribute to periodical examination, or for that matter, to dentistry as a whole, is to be found in the use of the tooth brush. No doubt, as has been said this evening, constitutional defects work on the teeth, but the hereditary tendency to decay, is, I take it, of a different source, as being due to teeth imperfectly developed or calcified. Whether influenza can be placed with the other diseases which bring about decay of the teeth, as scrofula, diabetes, phthisis and others, is beyond my knowledge, but the subject is certainly one for consideration. Its only bearing on this paper, is to again point the necessity for the use of water and the tooth brush at its occurrence. One or two gentlemen seem to take umbrage with regard to "our American cousins," but there is every reason to believe that periodical examination is more universally practised in America than in England, and this opinion is, I think, shared by one of the gentlemen who have spoken. I am glad to hear that one of us has found that young people are not so careless in dental matters as my small observation goes to show, but I fear they are still far in the minority, as the school report of the British Dental Association tends to show. No doubt in resident schools more attention is paid, but in the day schools the most alarming results are to be obtained. My paper was certainly not meant to imply that periodical examination was a new thing, for we are told "There is no new thing under the sun." My experience is very small, but it has so far led me to believe that those who do not work on these lines are in the majority, and that the system is by no means universal.

The President then proceeded to deliver his Address. (See page 145).

The thanks of the meeting having been accorded to Mr. Price, and to those gentlemen who had brought forward casual communications, the proceedings then terminated.

Dental News.

The Dental Hospital of London.

The 34th Annual Meeting of this Institution was held at the Hospital, Leicester Square, yesterday. In the report, which was unanimously adopted, the Managing Committee congratulated the Governors on the continued success of the Institution; also on the great benefits which the Hospital continues to afford to the suffering poor, 54,177 cases having been treated during the year 1891, a large number of them painlessly (under anæsthetics); being 5,413 over the previous year, and 34,922 in excess of the number treated in 1874, when the Hospital was removed to its present site. That in consequence of the still increasing number of Patients, it has been decided that in addition to the morning all Departments of the Hospital should be open in the afternoon, and that a Sub-Committee had been appointed to consider the advisability of additions to, or alteration of, the Hospital, with a view to securing further accommodation. That the "Dental Appliance Department," in connection with supplying artificial teeth, &c., was still doing good work on behalf of the Charity. That, unfortunately, there was £1,000 remaining of the mortgage debt on the Hospital, and they urgently appealed for funds to enable them to rid themselves of this encumbrance, incurred for the extension of the Hospital, rendered indispensably necessary to meet the growing wants of the Charity. The Managing Committee regretted that there had been many losses by death of Annual Subscribers during the year, and it was most desirable, if the good work of the Institution is to continue, that new Annual Subscribers should be introduced. The Charity is unendowed, and additional funds would enable it to greatly extend its usefulness.

The Annual Dinner of the Dental Hospital of London Athletic Club was held on Saturday, 5th March, in the Holborn Restaurant, Mr. Morton Smale in the Chair.

The popularity of the Chairman was attested by the number present, far in excess of previous years. After the loyal Toasts, Mr. Smale, in a very interesting speech, said their thanks were due to Mr. J. Turner, the Hon. Secretary of the United Hospital's Athletic Club, for his successful efforts in getting the Dental Hospital Club recognised by the General Hospitals. Dental Students being now allowed to compete in the United Hospital Sports.

The Secretary said the Club had a small balance in hand, and their record in the field was a successful one. He thanked the President, Sir Edwin Saunders, and the Hospital Staff, for their very generous support, and whilst regretting that so few Past Students supported them, suggested that they might make the "amende honorable," and hand their names down to posterity in the shape of a D.H.A.C. Ground.

Mr. R. H. Woodhouse proposed "the Visitors," and Mr. E. Hart the "Dental School." Mr. G. Field and Mr. W. Hern replying respectively. Mr. J. F. Colyer proposed the "Chairman's Health." The remainder of the evening was then devoted to music, Mr. E. Lloyd Williams having provided an excellent programme.

The Edinburgh Dental Students' Society Annual Dinner.

The Eighth Annual Dinner of the Edinburgh Dental Students' Society was held in the Windsor Hotel, Edinburgh, March 4th. Mr. Andrew Wilson, L.D.S., the Hon. President presided, and Mr. Frederick Page, L.D.S., acted as Croupier. Over sixty gentlemen were present.

After the loyal Toasts, the Chairman proposed "The Edinburgh Dental Students' Society," In doing so he counselled the members to keep personal matters from their debate, and to even aim at the advancement of their profession. The Croupier in reply said, that one of the principal aims of their Society, was the advancement of Dental Science, and they attained that end in many ways. It was the Council's endeavour, to use such means as to leave no doubt that they had the interests of the junior members at heart.

Other Toasts were "Kindred Societies," proposed by Mr. H. B. Ezard, L.D.S., replied to by Mr. J. S. Amoore, L.D.S. (London), and Mr. J. A. Biggs, L.D.S. (Glasgow) ; "The Edinburgh Dental Hospital," proposed by Dr. F. M. Caird, reply Mr. W. B. Macleod (dean), and Mr. G. W. Watson, L.D.S., Lecturer on Dental Surgery ; "The Edinburgh School of Medicine," proposed by Dr. Guy, replied to by Dr. Symington and Dr. J. C. Dunlop ; "The Guests," by Mr. R. Lindsay, reply Mr. R. C. H. Morison, and "The Chairman" by Mr. J. C. Cameron, concluded the official toast list.

The evening was pleasantly varied by an excellent programme of music, the students and guests vieing with each other in their contributions, recitation, song, banjo and guitar solos. Pipe-Major Macdonald, janitor of the Dental Hospital, who appeared in Highland Costume, played selections on his pipes during the dinner.

THE DENTAL RECORD, LONDON: APRIL 1, 1892.

ANTERIOR PROTRUSION OF THE UPPER INCISORS.

A MONOGRAPH setting forth the conditions and the combinations of conditions that give rise to and are associated with this form of irregularity, and detailing the varied methods of treatment that have to be adopted in dealing with it, would be of very great value. Attempts in this direction have been made time after time, but not yet have we met with any book or essay in which the subject has received such full and accurate and discriminating treatment as it undoubtedly calls for. Meanwhile, one is grateful for any contribution on the subject, such as is to be found in the recent discussion at the Odontological Society.

It can scarcely be said that that discussion contained anything strikingly new or original, but experience based on careful observation and conscientious practise, has always something to say that is worth listening to, even if the opinion expressed or the statements made are only reiterations or variations of previous utterances. The discussion referred to possessed points of interest which are well worth emphasizing. In the consideration of causes it is necessary to bear constantly in mind the fact that far more often than not, it is not one cause that is operating but several, and that correct treatment depends not a little on the proper appreciation of the relative proportion which these causes bear to one another, *e.g.*, in a given case, heredity, accident, and congenital or acquired disease, may all have to do with the irregularity presented, and an important part of the problem to be solved lies in the action and interaction of these causes. To study the shape of the maxillæ and their alveolar processes; to observe closely the articulation of the upper with the lower teeth; and to note carefully the line of the face in profile, these are things which, while clearly indicated, and of great importance and utility, are often left undone. Attention is far too often solely directed to the angle at which the teeth may be set, or the antero-posterior space between upper and lower incisosr—to the exclusion of such considerations as those above noted.

Several most interesting cases have been published, in which the protrusion of the upper incisors has been shown to be more apparent than real, the lower incisors standing back on account of the narrowness of the upper arch in the canine region, which, when expanded, has allowed a spontaneous "jumping" of the bite—the lower jaw shooting forward instead of being, as before, abnormally retracted. The discussion at the Odontological Society would have been even more interesting and instructive than it actually was, had this subject of "jumping the bite," whether spontaneous or gradual, been entered upon a little more fully; its importance and value is not yet sufficiently appreciated. Proper attention, however, was paid to the necessity for "raising the bite" in the molar region, which so frequently occurs where the lower incisors rest hard upon the uppers or upon the gum immediately behind them; and we commend to the notice of those practitioners who may not yet have tried the plan, what was said about the possibility of carrying incisors up or down, as the case may be, into their sockets, so as to obviate the necessity for grinding the cutting edges.

We were glad to see assailed—it cannot be too frequently assailed—the mistaken plan, far too often adopted, of capping the molars when drawing back the front teeth. When one sees how commonly this method is used, which, whilst doing good in one direction, nullifies it in another, one cannot but deplore the widespread lack of common sense that it indicates.

As to the wisdom of waiting until the twelfth or thirteenth year before actively interfering by means of mechanical appliances in cases of protruding incisors, considerable stress was laid upon that at the Odontological Society's discussion, and there is no doubt that in the great majority of cases, such a course is the best.

We could wish that even more had been said than there was, concerning the value of *rigid* appliances. Even the most troublesome cases will often be found to yield to the use of the nut and screw when a rigid *point d'appui* is provided, with a rapidity and ease which would astonish those operators only accustomed to the use of loose plates and springy steel or gold.

No doubt, it was felt that to do more than touch in the most casual manner upon the vexed question of molars versus bicuspids, in the matter of extraction when space is required, would extend the discussion to a length for which one evening would be quite inadequate. One can only be glad that a word or two were said in favour of the extraction of bicuspids, when it is remembered, that of all the teeth, the first molars are *par excellence the* grinding teeth,—that though poor in quality they may often be more satisfactorily saved than the second bicuspids,—that, as far as required space is concerned, the loss of a bicuspid in many cases is amply sufficient,—and that, to retract bicuspids as well as incisors and canines adds very greatly to the difficulty of the work and the time it takes.

There is a great lack of carefully recorded cases, which might serve as a basis for the comparison of methods and the value of certain lines of treatment under varying conditions. We hear that at the forthcoming Annual Meeting of the British Dental Association a great effort is to be made to form a collection of records and models of various forms of irregularities ; amongst these, no doubt cases of anterior protrusion will hold a conspicuous place, and we would urge all those who can, to bestir themselves in contributing their quota to so useful a display. We believe that Mr. G G. Campion, of Manchester, has been deputed to receive any such contributions to the intended museum.

Journalistic Memorabilia.

CUTTLE FISH BONE FOR DIES.—I read some time since, but where I cannot now recall, an article which said that jewellers sometimes employ the cuttle-fish bone, in common use for birds, as a matrix for reproducing small articles of jewellery, etc., the article being firmly pressed into the cuttle-bone, leaving a beautiful impression of the object, into which the metal was poured. I immediately thought it would be useful for small dies in crown and bridge work, and having tried it, must say it makes the most beautiful and perfect impression of anything I have ever used, and I wish to call the attention of the profession to it. Shave the bone till a flat surface is obtained, into which press the crown firmly. Remove the crown and over the impression place a small piece of brass tubing, the diameter and height you wish your die. Pour in some melted Babbitt's metal, and when cold you will have a perfect die, the making of which has not taken over five minutes.—*Frederick H. Lee, Auburn, N.Y., Items of Interest.*

DIFFICULTY AFTER EXTRACTION.—One evening last November a young lady of eighteen years called to have a tooth extracted, which had been giving her trouble. It was a lower right-second molar in a hopeless condition of decay, which I extracted. Next day I was called to visit her. I found the right side of her face completely paralyzed, mouth drawn over to the left-side, eye open and staring, could not wink that eye, if the lid was pulled shut could not open it, and sight in that eye almost gone. She had consulted her physician and he sent her back to me. I advised electricity, and gave for the first three days two treatments, and for the next ten days one, after which the face was in a normal condition, improvement being felt after the first day. Sight returning first, then the movement of the eyelid. An examination of the mouth with an electric mouth-lamp showed nothing unusual, nor could I discover any fracture by the use of an instrument in the socket of the tooth.—*A. H. Butterfield, D.D.S., Stamford, N.Y., Items of Interest.*

CHRONIC ABSCESS OF THE ANTRUM.—Dr. E. D. Eddy writing in *Items of Interest* records the following: "Mrs. H., aged thirty-eight, sanguine, bilious temperament, was presented to me by my friend and neighbour, J. R. Goodspeed, M.D., September 4th, 1890, the right eye was a little inflamed, the right side of the face flushed and slightly swollen below the eye, and quite sensitive to the touch. In the mouth the upper bicuspids and molars were missing, leaving a well-preserved and healthy alveolar ridge, except at the point where the first molar of the right side had been extracted ; here was an opening into the antrum, about two lines in diameter, through which constantly oozed a purulent discharge, composed mainly of viscid serum charged with pus, food débris, and streaked with fresh blood. There was also an intermittent discharge of the same character from the right nostril. She said she had lost one after another all of the missing teeth, the upper right first molar the last, in 1888. This tooth was extracted for severe neuralgia. This was cured, but the cavity would not heal, and a dull, continuous pain was present in the right side of the face and head. After several months an attempt was made to close the opening by suture, but it proved abortive, and after several attempts she became discouraged. During the two years before she came to Dr. Eddy, who after hearing her statement, inquired if she had ever worn a plate or other appliance to cover the opening into the antrum ; she replied that she had not. This gave me the key to my treatment, and made me feel very sure of success believing the condition was caused mainly by irritation caused by particles of food being forced into the antrum by the process of mastication. There was nothing to indicate the presence of necrosed bone. Though the margin of the opening was soft and slightly inflamed, no roughness could be detected by passing a silver probe freely to the floor of the antrum. My treatment was four ounces of sterilized tepid water, slowly injected into the antrum by a hard rubber syringe attached to a soft rubber catheter of proper size, to fill the opening into the mouth. The fluid was nearly all discharged through the nostril. This injection was followed in a few moments by the same quantity of water, in which was dissolved a half dram of the following solution : Iodine and phenol, of each sixty grains ; alcohol, two fluid drams, prepared at the moment it was used, as the water will precipitate the iodine in a short time. Following this second injection, the cavity was carefully wiped with absorbent cotton dipped in vaseline, containing one-fourth its weight of iodoform. This operation was repeated three times at intervals of three days. A plugget of cotton was inserted in the opening after the first treatment to keep out débris till the plate could be made, and this was inserted on the day the second treatment was administered.

There was no pain after the first treatment, and all of the inflammatory symptoms had disappeared before the third treatment was given. There was no sign of pus after the second treatment, and at the time of the third the opening into the mouth had grown so small that it would only admit a small probe. A week from that day I found the opening about the same. I then dissolved one-sixth grain muriate of cocaine in five minims of water, and injected it into the soft tissue on each side of the opening. One minute later I applied a cautery made for the occassion by bending on itself a piece of wire (22 gauge) and bringing the bow to a white heat with the blow-pipe in an alcohol flame. The burn was quite deep, though the operation was painless. The plate was returned to the mouth with directions to keep it there for at least three days. I saw the patient ten days later, and found the opening closed and healed. On inquiry, six months later, she wrote me (March 30th, 1891): 'I am glad to be able to write you that I have had no return whatever of the antrum trouble for which you treated me.'"

Dr. R. Matthews presented before the Kansas State Dental Association the following statistical report of pulpless teeth treated by him at Wichita, Kansas, from December, 1882 to April, 1891:—Whole number treated, about 500; number reported on, 293; number entirely successful, 273; per cent. successful, 92⅓; per cent. of failures, total and partial, 7⅔; males, 112; females, 161; upper, 169; lower, 104; first and second molars, 95; third molars, 22; bicuspids, 101; cuspids, 6; incisors, 49; the pulp destroyed, 126; pulp dead, 116; abscesses, 30. Time since Operation: From 8 to 9 years, 7; from 7 to 8 years, 18; from 6 to 7 years, 34; from 5 to 6 years, 25; from 4 to 5 years, 24; from 3 to 4 years, 32; from 2 to 3 years, 66; from 1 to 2 years, 17; one year and less, 50. Age of Patient (Approximate): 6 to 10 years, none; 10 to 20 years, 10; 20 to 30 years, 96; 30 to 40 years, 107; 40 to 50 years, 44; 50 to 60 years, 20. Of the total failures or those that have been lost, 1 was comfortable, 6 years; 1 was comfortable, but growing loose, 3 years; 1 was perfectly comfortable but had an abscess form about twice a year for 8 years; 1 was never comfortable and was lost in 1½ years; 1 is still in the mouth for 3 years, but is very loose and abscessed. Of the twenty classed as unsuccessful, fifteen are doing duty with more or less comfort. Of these twenty there are: Males, 11; females, 9. Of the teeth there are: superior bicuspids, 7; superior molars, 6 ; inferior molars, 6 ; superior incisor, 1 ; I destroyed the pulps in 10 ; abscesses treated, 6 ; pulps found dead, 4. They have failed in a time varying from three months to eight years. What have I learned ? This : That most all teeth carefully treated and the roots filled, will give years of comfortable and successful use. I have two in my own mouth, in which the pulps have been dead for some twenty-five years each. I do not learn that there are any known causes for the failures, for they have occurred at all ages, in both sexes about equally, in the teeth with former abscess and those in which I destroyed and removed the pulps myself, in lengths of time varying from three months to eight years, in the robust and frail, one failing in the same mouth where others succeeded. This work has been done universally with the use of rubber dam. The root filling is as universally with gutta percha points softened with chloroform.—*Western Dental Journal.*

One of the most curious episodes in historical research during recent years (says *The Times*) has been the gradual discovery of the monument of a civilization whose existence was not attested otherwise by any ancient authority, nor suspected by modern writers until the last decade. The leading journal has, within the last few weeks, devoted several columns to the subject, under the title of "Hittite Discoveries in Asia Minor." Since 1872 the existence of monuments evidencing the existence of an ancient and individualized art in that country has been from time to time made known. In 1882 Sir Charles Wilson and Professor Ramsay discovered the existence of a stone bearing Hittite hieroglyphics in the house of a Greek woman at Bor, but it was not until 1890 that an expedition representing the English Asia Minor Exploration Fund were able to purchase it, after interminable negociations, for £20. It was then found that this was only the upper half of the complete monument. But, although the lower half has been found and seen, the owner has not yet been persuaded to part with it. Two similar inscriptions (at Andaval and a rock near Bulgar Maden, in the Taurus) have since been discovered, but, unfortunately, none are bi-lingual. Professor Sayce considers the last named the most important Hittite record in existence, containing, as it does, nearly 400 incised symbols It is cut in the face of an overhanging rock, accessible only by goat paths.

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Original Communications.

THE WORKROOM AND ITS TOOLS.

By W. Booth Pearsall, F.R.C.S.I., Dublin.

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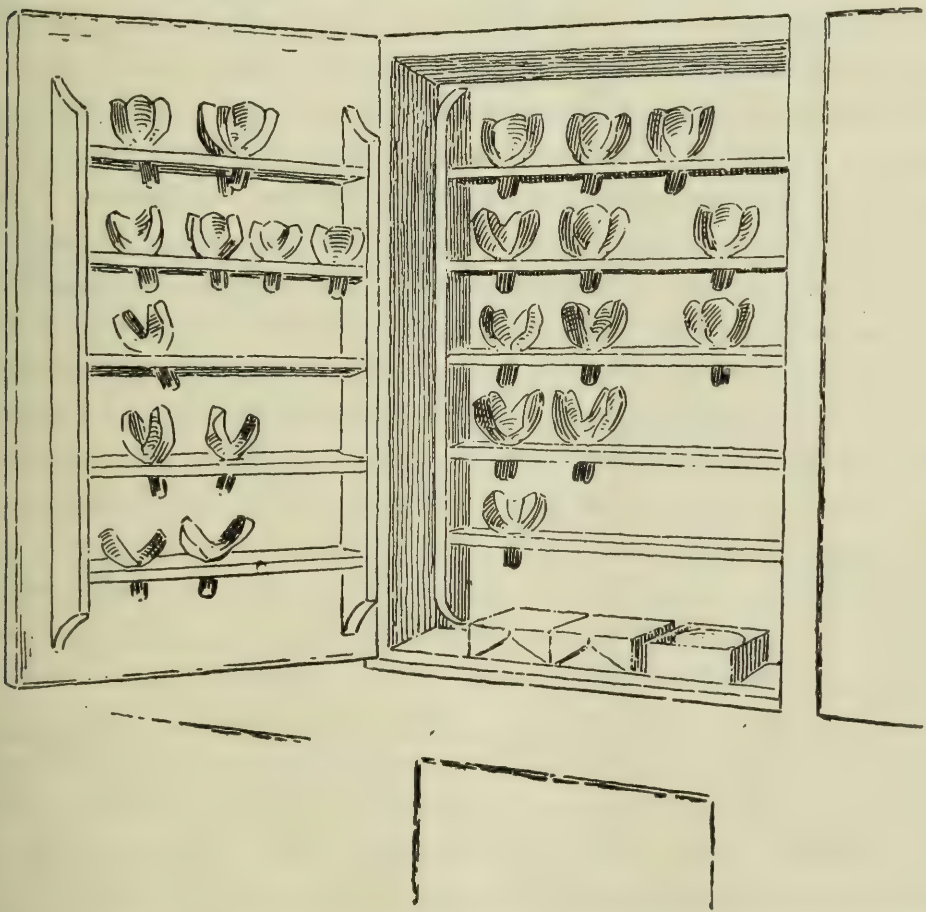
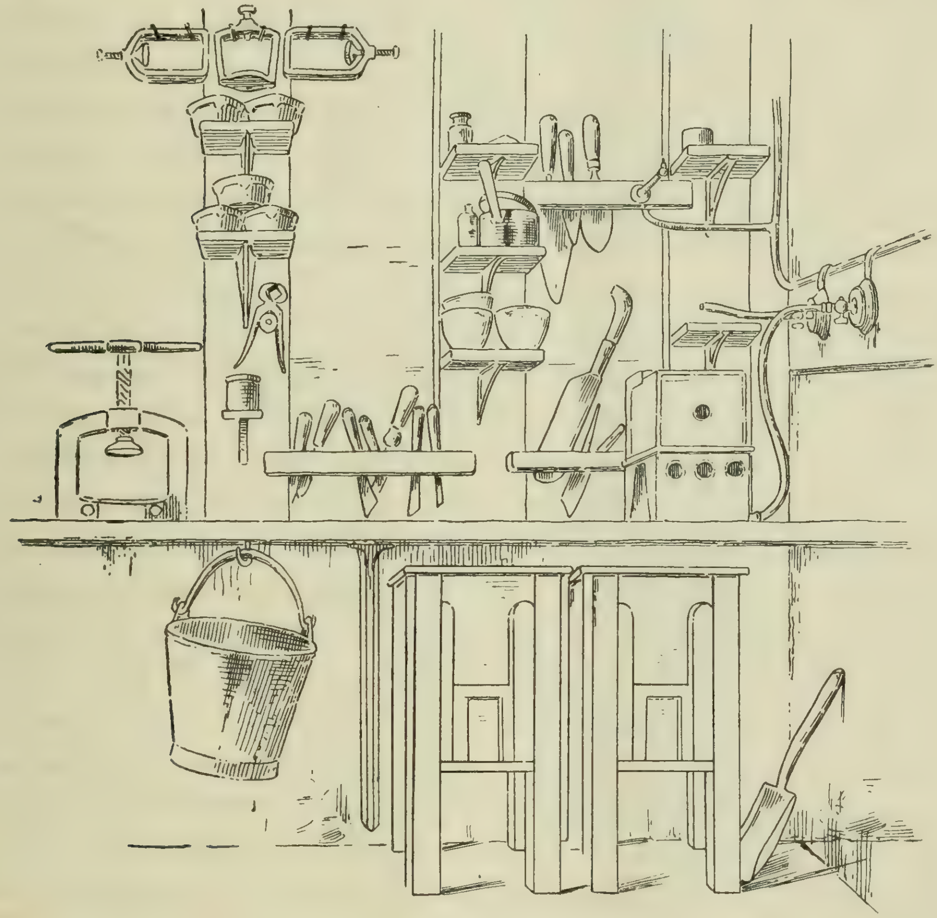
Mechanical dentistry, to have successful results, largely depends upon correct plaster models, and before going on to describe the plaster bench, and the plaster tools used in the workroom, a few words may be devoted to the subject of impression trays; as these tools pass from the patient's mouth to the workroom, and from the workroom back again to the operating room. In order therefore to obtain correct plaster models of the mouth, appliances called impression trays are used, in which to place the moulding material, bees' wax, gutta percha, godiva, stent, or plaster of paris, when in a plastic condition, and so conveniently carry it to the part of the mouth thus to be moulded. These mouth trays are commonly made of metal, and vary in shape according to the character of the teeth and the jaw to be copied. Many dentists make these tools for their own use, others depend upon the dental manufacturers for all that they need. The mouth trays usually sold are made of pewter or Britannia metal, an alloy of tin and lead, and are to a certain extent the outcome of the experiences of many dentists with respect to shape and size of tray; to which is added that conventional and formal neatness of pattern a maker who does not *use* the tray is apt to develop, and which is so attractive to the inexperienced purchaser, when seen in the wareroom glass case, or figured in the illustrated catalogue; but which neatness of form too frequently ignores important anatomical facts. The selection of an outfit of impression trays of a practical character to meet the daily wants of a practitioner does not appear to be an easy matter, from the great variety of designs to be found in the dental manufacturer's catalogue, and in the glass cases of the depots. Some dentists do excellent work with a set of eighteen different shapes and forms, and others again with even a smaller number.

Impression trays should be smooth and well polished, and should cover the parts intended to be cast, with sufficient relation to the contour of the jaw, so that the impression material shall be tolerably even in thickness and so help to counteract the tendency of some materials used for moulding to fall away when in a plastic condition from the surface they have been applied to from their own weight, as we often see, when inexperienced attempts are made to cast some kinds of palates, when the general surface of the tray does not conform to the contour of the mouth. A well fitting, well designed tray enables a dentist to be certain of getting a reliable impression of the jaw, when using it, as there is little likelihood of the warm or soft material with which the tray is charged falling away, if the tray and its contents are firmly and steadily held in the desired position against the parts of which the dentist desires to obtain a copy. Changes of form in the impression, are mostly caused from want of judgment in the selection of the tray, or from the unconscious movement caused by the restlessness of the patient, or the timidity of the dentist, as well as the not unfrequent use of excess of material put in the tray, before placing it in the mouth. It is wiser, therefore, not to waste time making work on a doubtful model, but to cast the imperfect model aside, and endeavour to obtain a better one. A doubtful model can be tested by making a fusible metal plate on it, as practised by Mr. R. P. Lennox, of Cambridge, and described in his paper on the subject in the Journal of the British Dental Association, as plates of shellac, wax, stent, and other easily moulded materials, are not to be depended upon, unless in the hand of a very expert dentist, or made of a very bulky form, in the latter case the inexperienced dentist is apt to be misled as to the truth of fit. Ornamental or decorated handles to impression trays are, it appears to me, out of place, however attractive they may look at the time of purchase. They are often deficient in strength, and are difficult to polish and keep clean. The same attention should be given to the condition of impression trays that a conscientious operator pays to the condition of his instruments, even if he should not be an ardent follower of the antiseptic or anti-microbe school. With a view of saving time I have placed lockers, or cabinets, in the partition walls of the operating rooms, specially designed to hold mouth trays when they are properly cleaned and polished, so that when the door is opened the contents of the locker can be seen at a glance. Each tray has its place, the handles dropping into suitable slots in shallow shelves, which are lettered, or numbered, each tray having the corresponding letter or number of its place in the cabinet shelf and slot stamped on its handle, so that there is no difficulty in placing them in their proper order, and ready for use. The illustration will show this simple plan of tray cabinet, which will hold 80 trays so as to allow for growth in number of forms, as well as duplicates of trays that are frequently used. These tray cabinets open on each side of the partition, so that the clean trays can be returned to the cabinet from the outside without disturbing the occupants of the operating room. These cabinets keep the trays as clean and free from dust as most drawers I have seen used for this purpose ; while, at the same time, the trays will be found arranged in a more convenient and accessible way. The impression trays are all home made, from German silver, and the collection has grown from time to time, many of them having



been designed and made by my father fifty years ago, when impression trays were hardly to be purchased. If a case should need a special tray, the most appropriate tray in the collection is used in the mouth, and the impression cast. A set of plaster blocks cast in the trays are kept in the workroom ready to be modelled to suit such a case. By the aid of bees' wax, or other modelling material placed upon one of these plaster models the needs of an unusual case can be met. The model thus prepared can be cast in sand, and a zinc die made, with which to stamp or strike up the tray in a lead or zinc counter, according to the shape required. As a stock of suitable handles are kept ready prepared to solder to a new tray, there is not much delay in getting the sort of tray required. So far as my experience has gone, German silver of a suitable gauge used in this way answers all wants, as it is not too difficult to manipulate, and is very stiff; while at the same time, the general bulk of the tray is much less than those made of pewter, tin, or gutta percha. The appearance of a German silver tray that has seen service is far better than a pewter one, the former metal being much easier to keep in a presentable condition and less subject to injury from the carelessness of the junior in the workroom. Some dentists, who use plaster of paris for taking casts in the mouth, recommend the trays to be made from zinc, as they are under the impression that plaster adheres more firmly to the surface of zinc than to other metals or alloys used in making trays, I have made some experiments in this direction, but I do not find that the adhesion of plaster of paris is any greater to zinc than to German silver. It should also be borne in mind, that many intelligent dentists cover their plaster benches with stout sheet zinc, from the ease with which the plaster splashes dropped from the plaster bowl, or the excess of plaster left when impressions are cast can be pushed off the plaster bench with a knife or scraper, or quickly freed from the surface with the aid of a little water. Zinc has to most patients an unpleasant taste, which tends to increase the flow of saliva from the salivary ducts, a condition of affairs we would rather be without under such circumstances. Mr. Wm. Simms, of Manchester, has recently recommended trays made of fusible metal in plaster moulds, but the bulk of metal necessary to run these trays without failure, free from holes, seems to offer a considerable objection to their use. The brittle crystalline character of this alloy should be borne in mind when used as a handle. Should the practitioner meet with any moderate resistance in removing the tray rom the mouth with the impression the handle would hardly bear the strain without breaking.

The plaster bench is a plain shelf of wood, 18 inches wide, 1½ inch thick, 5 feet long, and 33 inches from the floor, and is made of beech ; deal and other soft woods are commonly used for this purpose, but the wear on the surface of these softer woods by the constant chopping of knives and chisels, in trimming down the plaster abrades the bench, leaving an uneven surface on which it is difficult either to cast or to pare models truly. There is no subject on which there is a greater diversity of opinion amongst dentists than the question of plaster, and how to use it—and considerable elaboration has been shown by many skilful men in their work benches for plaster. I have discarded drawers, boxes, inclined planes, slides, shoots, and other ingenious methods of hiding away the detritus caused by paring models after they are drawn, so that if this plan of arrangement seems rather ascetic, the absence of elaboration in this design is the deliberate result of great experience. I have a



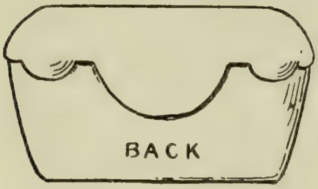
strong objection to drawers for receiving the parings. In the first place drawers are never emptied until it is impossible to place any more plaster in them, and the collection of several months' parings in a busy workroom means considerable weight to be lifted away; and in the second place I prefer to have whatever mess is made during the day removed the last thing in the evening, and thrown into the bucket of house-refuse intended for the scavenger. The diagram will show the method of arrangement at the back of the plaster bench, the shelves being so constructed as only to hold the articles intended for use, vulcanite flasks, flask clamps, vaseline pot, stearine pot, flask screw press, hot water oven, plaster knives and india-rubber plaster bowls. At the left hand end of the bench, hanging on a hook fixed in a well chosen position, is a galvanized bucket, so that when the parings of plaster are to be removed from the bench the left hand can seize the lip of the bucket, and draw it forward, while the right scrapes the plaster parings into it. The upper edge of the bucket proves an admirable *scraper* on which to clean the knives. Below the bench will be seen the plaster bins capable of holding half a barrel of plaster each, with a sliding door through which one can take a tea-spoonful of plaster or a shovelful. When filling these bins with plaster from the barrel, as it comes from the manufacturer, the square tops can be lifted off by unscrewing four screws, so that the plaster can be rapidly stowed. The bins stand on stout legs, about nine inches from the floor, in order that the lower part of the plaster may not be deteriorated by coming in contact with the floor; as I have found from experience that the lower portion of a barrel of plaster, if allowed to rest undisturbed for any time on even a boarded floor, shows some considerable loss of rapidity in setting when mixed with water. These bins have been in use some years and have proved to be of the greatest comfort so far as convenience of access to the plaster and its dryness are concerned.

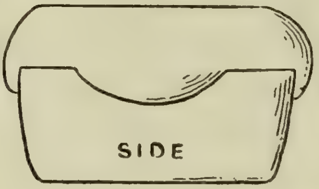
Having purchased plaster for many years by the bag, and kept it in a tin case, I have come to the conclusion that the present method is the best, for I am convinced from observation that even the best brown paper bags are very little protection in keeping the atmospheric air from plaster. As the plaster has to be taken out of the manufacturer's casks, and put into these bags somewhere or other by the distributor, it would stand to reason that a very moderate exposure to the air of our humid climate must seriously effect the setting qualities of the plaster; and, as it is one of those materials that no dental work-room can possibly be without, a little extra trouble to the dentist at the time of laying in his plaster, and securing it against deterioration from exposure to the air, is well repaid. I have on several occasions made enquiries both from the distributors of plaster, and the manufacturers of it, why air-tight cases, permitting the same ease of access shewn in the plaster-bins, beneath the plaster bench in the diagram, could not be placed at the service of consumers of plaster; but I have been told in reply that only a few would use them and that of the few wishing to use them many would grumble at having to pay the cost of the returned empty. The plaster known in the trade as Italian fine, seems to supply most of the wants of the dentist, as it is sufficiently fine, on the one hand, to make a very sharp cast with a surface of glass when delivered from a polished surface, and on the other, has sufficient toughness to afford every facility in modelling vulcanite, particularly if the plaster in the vulcanite flask is allowed to set over night.

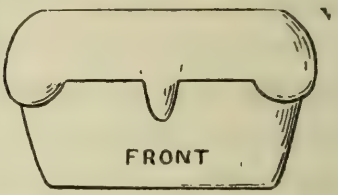
The diversity in form of vulcanite flasks is endless, whether they are called simple, or are exceedingly complex with many nuts, or bolts, to be handled; two-part, three-part, four-part flasks are quite common, and it would be well therefore perhaps to devote a few words to discussing the characteristics of a good flask.

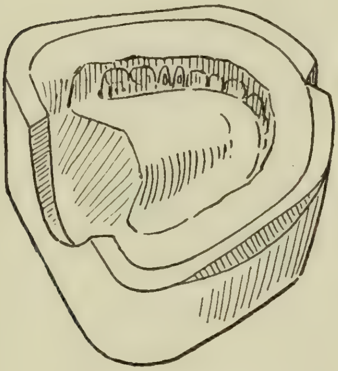
In the first place, a flask should be strong, made of a metal that will not easily deteriorate in the sulphurretted steam formed in the process of vulcanisation. It should also admit the object to be cast in it, in such a way as to allow an even thickness of plaster about it, and at the same time have the lingual or palatal surfaces of the plate uppermost. That is to say it would be quite possible to cast the wax model of the case with the teeth standing up as if set in place on the model, or reversed with the surfaces of the teeth intended to rest on the gum uppermost. The flask should not be complicated with any long or delicate "guides," but should allow great latitude of motion when articulating the surfaces together, so that in cases presenting marked undercuts, the act of closing the flask will not draw away the vulcanite from the place where it has been packed. The moulding and packing of a vulcanite case requires some skill, for it will be agreed that squeezing, or forcing, even well-heated vulcanite by main strength into places where it has not been packed is not always to be depended upon, so that a quarter of an hour of extra intelligence in this direction is time well spent.

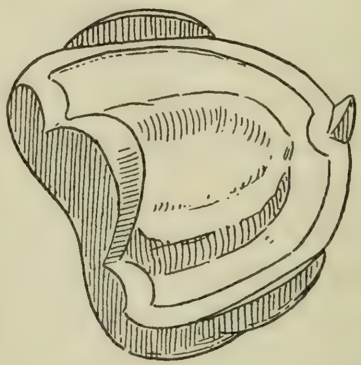
The flask I am in the habit of using is the outcome of some years' experiment, and the patterns were made for me by Mr. A. J. Watts, now Curator of the Mechanical Appliance Department, Leicester Square, London. It consists of two parts, and is cast in gun-metal which is carefully filled up. The shape of this flask has been designed with some thought to meet the conditions I have already discussed, and its strength is so great, that a fall on the floor, or a little extra zeal in screwing up, from the forgetfulness of the workman, cannot injure it. The wax model of the denture can be invested with the lingual surface of the palate uppermost, or *vice versa*, as may seem most convenient to the dentist ; it is made in two sizes, so that ordinary cases can be invested, as well as dentures of an exceptionally large size. With a little ordinary attention, these flasks do not soil the hands of the workman in the same way as the sulphuretted surface of iron flasks do, and so strongly leave their mark on the hands. The diagrams shew the construction of

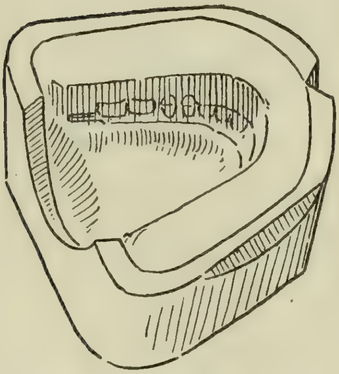


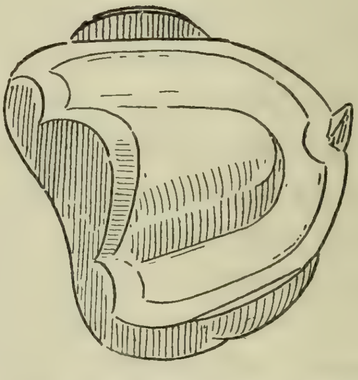












these flasks, the chief features being the short stout "guides," all made with inclined planes, permitting lateral and other adjustment before closing the flask, so that in the act of closing the halves of the flask can only go into correct position. Some years ago an attempt was made to place these flasks on the market, but the inventor was met with the fatal objection, on the part of the manufacturers who supply the profession with these appliances, that they would not wear out. In other words a dentist who had once purchased a set of these flasks was equipped for life, so long as our present method of manufacturing vulcanite remains in practice, and he does not use a toy vulcaniser. I have had a considerable experience of American and English vulcanite flasks, and this pattern which I have described seems to me to supply all the needs of a practical workman. Those who use them regard them with the same high estimation that I do, and those who have not seen them can understand their construction from the illustrations which have been carefully drawn from the objects they represent, with cases ready invested in the flasks.

AN INTERESTING CASE OF RETARDED ERUPTION.

A Case in Practice.

By Guy Harper, L.D.S.

Miss——, age 19 years 7 months, presented herself for the extraction of the right lower temporary canine, the permanent one being nearly fully erupted on the lingual side; on examination the following circumstance was revealed. The upper laterals were unerupted and quite imperceptible to the touch. The upper temporary canines were in situ and very firmly fixed, their permanent successors being perfectly apparent in an unerupted condition on either side, and close to the median line of the palate; the lower left wisdom being the erupted third molar.

Her sister aged 18 years, 10 months, also wished to have her right upper temporary canine extracted to allow its permanent successor to, if possible, come into its place. This tooth had erupted close to the median line with a direction opposed to its being pushed into anything like proper position, a further examination showed that the left lower lateral was absent, and had never been erupted, the remaining teeth were normal as regards quantity, but very deficient in quality, as almost all but the incisors showed signs of decay, the first lower molars being nothing but stumps. Both patients were healthy, well developed girls.

ON THE MANAGEMENT OF PATIENTS.*

By George Northcroft.

Mr. President and Gentlemen,

Although, Sir, in your inaugural address you expressed a hope that you might hear really scientific papers read in this society, I fear I shall have to leave that hope unfulfilled as far as I am concerned, for it was my misfortune to choose a subject before I had the pleasure of hearing that admirable address.

But although I cannot claim that my paper is strictly scientific, I hope it will be of such practical value, as to atone for its lack of technicality.

Of course it goes without saying that every student trained here is fully alive to the importance of doing absolutely good work; no man can in the end expect to be successful who does not keep constantly before him the highest ideal of his profession; for as Emerson says:—"Our own safety lies in having lofty ideals, and in constant labor to secure their realization."

You may reply to this, "We do not want to labour for the realization of ideals, but for hard cash." I venture to think, if one works in this sordid spirit the capacity for doing the best becomes atrophied, and eventually one loses even one's mess of pottage, for which has been bartered the standard of right.

Where would have been any chance of earning money in our profession to-day, had it not been for those noble men, who in former days worshipped ideals and freely gave their lives for Science?

I would not weary you, but I do think, considering how absolutely our patients are in our hands, we ought to consider well our responsibility, not only to them, but to the best traditions of our profession. It lies with us, who are now students, whether in the next generation dentistry ranks equally with medicine, as a profession for gentlemen, or sinks to the level of a trade only to be practised by empirics and mountebanks. Personally I am convinced—"how far high failure overleaps the bounds of low successes," and I hope however great my anxiety to make money, I shall never forget what I owe to myself as a gentleman and a member of the dental profession. But I am not here to-night to "magnify my office," but to discuss the management of patients.

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*A paper read before the Students' Society, Dental Hospital of London.

Generally speaking it is just as well to remember that, having finished the " demonstration " stage, we have also finished working on blocks of ivory, and when upstairs are working on human beings with tissues as sensitive, if sometimes not quite so clean, as our own.

If we lose sight of this in dealing with hospital patients, we shall find the Nemesis come home when we start practise for ourselves. A hospital patient has no choice but to grin and bear it, but a private patient finds a hundred doors eagerly opened to receive him, as Sairey Gamp said " with love and tenderness."

But do not make the fatal mistake that gentleness, like a coat, can be put on and off as occassion requires. It should be the natural attribute of a man in our profession ; when it is only veneer laid on for the sake of a fee, the inevitable result must be nervousness, awkardness, and bad work.

It is of infinite value to a dentist to have quick perceptions and a keen insight into human nature, for patients are not *only* human beings but individuals, and one must see in a flash the best way to deal with each case. A well-bred ease of manner is always reassuring. To preserve a solemn silence during the preliminary stages of the operation gives a funereal tone to the proceeding that forces the patient's heart into his boots.

On the other hand to keep up a jaunty and familiar chatter to a comparative stranger may inspire him with a disgust that will barely allow him to remain in the chair. It is most unseemly to be continually talking while our patients are in pain, and nothing is so aggravating and makes a patient so little inclined to " suffer and be strong " as an operator who keeps up a ceaseless flow of irritating common-places, and asks questions, any reply to which the rubber effectually prevents.

" Nothing so tends to alienate friendship as a difference of taste in jokes "; and it is possible that a dentist, whilst imagining himself particularly agreeable or particularly witty, may be sowing in the patient's mind seeds of fatal distrust in his conscientiousness and skill.

Cases may be easily recalled where men worthy of the highest position in our ranks, from their grasp of professional technique, have made the most unfortunate failures from want of *savoir faire*. The converse of this is also to be met with ; men, unhappily inferior operators' conduct immense practises and make large fortunes, simply by trading on their accurate knowledge of human nature.

The best way to secure a patient's confidence, that element indispensable to success, is to be perfectly natural. Let him see that you know what your are about, but do not think it necessary to give him verbal imformation on that point. If he believes in you it is unnecessary, if he does not it will only make him more suspicious. Explain the character of the operation simply and clearly as far as you think it wise to do so, for fear is more often caused by the anticipated severity of the operation than by actual physical pain ; and patients who have confidence in their dentist often suffer more in the reception room than in the chair.

Garrick said, " A fellow feeling makes us wondrous kind " and if dentists were operated on a little more often themselves, they would sympathize much more with the patients under their care. Often a timely word of sympathy will enable a patient to endure bravely, and an assurance from the operator of knowledge of pain given, or a warning of pain to come, will help him to overcome difficulties that would be otherwise insurmountable.

In these days of antiseptic surgery little need be said on the great subject of cleanliness, but we must remember that the patient is very quick to detect and make mental note of the slightest blemish in this respect. I am sure, however, we should never so far forget ourselves or our profession as not to have spotless hands and instruments, and the only plea for a dentist not doing his own mechanical work is that it ruins the look of his hands, and makes them feel harsh round the patient's mouth.

A word about dress may not be out of place here : it is generally supposed that a *gentleman's* dress is always suitable to the occasion —but I know of some members of our profession who, by appearing in the morning arrayed in evening dress have evoked from the surprised patient the query "Am I addressing Mr.———?" doubting whether he had entered a dentist's consulting rooms or intruded upon a conjuror about to give a séance ; or who, by wearing lounge coats or shooting jackets, create in the minds of the patient an uneasy suspicion that he has fallen into the hands of an amateur artist or a cockney sportsman, instead of into those of a man whose chief devotion is to his profession.

I *have* heard of men who in the surgery wear heavy boots with mud upon them, who bring in with them the odours of the stable, the smoking room or the bar, and whose cuffs and collars are certainly no advertisement for their laundress. But we hope that such occurrences are rather the exception than the rule, and that the recounter of them, obtained, as Sheridan said of Mr. Dundas, " his facts from imagination."

Ever bearing in mind the influence of one's surroundings, it is very important to avoid so displaying our instruments and various appliances as to suggest either a chemist's shop or a torture chamber. We should endeavour to keep the atmosphere and surroundings free from suggesting the sufferings of the previous patient, avoiding as far as possible the use of strong smelling drugs, and removing from sight all soiled napkins and rubber. I think it wise to place our cabinets slightly behind the operating chair, and to abstain from the use of mirrors in front of the patients. It is at times very undesirable for our patients to observe our actions which may be closely followed by the untimely reflection of a piece of glass. If medicine bottles are used on the bracket it is well to make it a rule to turn the label away from the patient. I have seen a patient actually grow nervous at the sight of a bottle labelled "Chloroform" and fearingly ask if she were about to be anæsthetized, when the unobservant operator had no thought beyond smoothing off a G.P. filling.

One cannot be too careful in practise to have one's surgery and waiting room suitably furnished, the appearance of quietly and harmoniously decorated rooms have a wonderfully soothing effect on patients of all temperaments. Neither should the rooms be too luxuriously furnished, for, I have heard patients, when speaking of such houses, say that they know the fees they pay are in direct ratio to the elegance of the appointments. One should not, however, go too far to the other extreme and let the rooms become shabby or show an absence of finish, for then the fact is borne in on the patient's mind that the dentist cannot be doing a good business and lacks patronage for want of skill.

Having now considered a few of the important qualifications and defects, the surroundings both good and bad, that are to be observed in the general conduct of a dental practise, some words may be added on the management applied to individuals of differing age and sex.

Children are perhaps of all the most difficult patients to deal with, as their fear of the unknown and ignorance of the benefits to be derived in the future from the sufferings of the present, lead them to suppose that the pain inflicted is an unnecessary trial grievous to be borne. And as explanation and argument are beyond their mental range, it is only by firmness and great tact that the operator can make them submit to the sufferings they so resent. By raising such bogies as a life embittered by the horrors of dyspepsia or the unhappiness resultant from a consciousness of an unsightly irregularity, (which as years increase may be made the subject of pity or ridicule) it is possible in some cases to influence the young. Promises of rides in the chair or a present of sweetmeats for "being good" may have the desired effect on children of a more sordid temperament.

Cases however there are, with which only sternness of the most autocratic type will avail anything, but this course—resented alike by mothers and children—is most inadvisable except as a last resort.

The method "par excellence" is to gain the child's affection, and make him trust you. You have doubtless read, and with me admired the unswerving faith that Porthos possessed in his friends. Have you not observed that its great attractiveness is that it is the ignorant trust of a child rather than the discerning confidence of a calculating man?

But while we make use of this trust for the child's own good, let us beware never to abuse it, for he who robs a child of one atom of his faith in human nature commits a crime more reprehensible than many severely punished by the law.

In dealing with male patients we should remember that to many, however wealthy, "time is money" just as much as it is to us, and too much attention cannot be given to the importance of punctuality, if we desire to become successful practitioners.

The ten minutes or so which we carelessly let slip at the commencement of the day is never regained, but rather, like a snowball, gains in size as the hours pass by.

Punctuality may be formed into a habit by constant watchfulness, and by exercising it on our hospital patients we may lay the foundation of an attribute which in after life will prove invaluable.

Nor should we become so entirely absorbed in our profession as to take little more than a passing interest in the outside world. If a man endeavour to converse on a subject he does not understand, or can only reply in monosyllables to subjects introduced by his patient, he not only suffers himself from that unpleasant sensation of inferiority, but forces his patient to regret having spoken.

By endeavouring to acquire a fund of general information these mutual *contretemps* will be avoided, and while the works of our hands may be valued, the workings of our minds may not be despised.

The supposition that men are less sensitive to gentle treatment than women is entirely a delusion ; as is ably pointed out by Professor Lombroso (in the *Fortnightly Review* for this month), who not content with claiming for them equal sensibility to pain declares that he had proved by experiment that their sufferings under the dentist's hands are far more intense.

A good story is told of an American who in answer to the sympathetic enquiry of the dentist, "Am I giving you much pain ?" replied, "I can stand the pain in my teeth, if you will kindly take the corner of your cuff out of my left eye."

It may have been the same operator, who when burnishing a gold filling was surprised to see large tears coursing down the cheeks of his small patient ; on seeking an explanation of the woe which so harassed the youthful soul he discovered that he was with the hand piece pressing tightly the boy's lip against his teeth, and was himself the engine to what Sam Weller called "the fellar's water-works."

In the management of the "eternal enigma," as a recent writer has termed the fair sex, there is so much both to do, and to avoid, that I cannot attempt to treat of the subject fully to-night. But a few of the most important points it may be beneficial to touch on.

It is with this class of patients that a cultivated ease of manner, and sympathetic bearing weigh so much ; it is they who recommend a dentist for his good chair-side manner ; it is they who judge of the work done by the bearing of the man who does it.

To be able to reassure a lady patient as soon as she enters the room is a great step gained, and a dentist who realizes this soon reaps the reward of his knowledge.

One of the greatest difficulties a dentist must study to overcome is so to hold his left arm round the patient's head as not to disarrange her hair. It is a thing to which for obvious reasons a lady strongly objects and such awkward incidents as the following—which the relater informed me actually happened in his own practise—may occur.

His patient, a dignified aristocrat, happened at the time of her visit to be wearing a false plait, and in the movement of arm round her head he had the misfortune to detach this artificial appendage. The chagrin of both dentist and patient may be better imagined than described. He never saw her face again.

In the use of perfume in the surgery and on one's hands, care should be taken not only in the selection of the scent but in the quantity used. All ladies do not equally appreciate perfumes, to some the odour of scent is scarcely less objectionable than that of drugs.

For those who use such things, it will be found useful to keep a little face powder ready to hand. The rubber often leaves an unsightly redness about the corners of the mouth ; and the thoughtful dentist who provides such small comforts is justly popular.

Much may be done by watching the patient's face. It generally betrays the clearest indication of pain received, and by studying it we may ascertain how far it is safe to go without evoking a remonstrance from the patient.

One rule should be zealously observed. Never surprise them. Sudden pain received without previous intimation is by some treated almost as an insult and frequently attributed to the ignorance or carelessness of the dentist.

In operations that are likely to prove tedious, painful, and expensive, a little appeal to the patient's vanity will enable many ladies to bear a great deal that would without such a suggestion be deemed by them needless.

And now for a few words on those patients whom the young practitioner most dreads,—those who are inclining to the sere and yellow leaf. The old are liable to look down on the fresh graduate as an inexperienced intruder, who does not know his business ; to underrate his ability, and distrust his progressive inclination.

They annoy him with suggestions, and advice ; with recollections of what dentistry used to be in the dear old past, as well as sermons on what it should be to-day. There are two ways of dealing with such persons ;—divert their thoughts by talking of subjects foreign to dentistry, or allow *them* to do all the talking. Let them imagine that you are swayed by their opinion, if necessary even affect to submit your opinion to theirs, but while in appearance you receive advice in reality follow your own conviction of what is right—never let your judgment be warped by anything the patient may say, for only by so doing can the best work be accomplished. The end will justify the means ; the satisfaction of all parties will be realized.

Who knows what strong recommendation may not result from the propitiation of one cantankerous old maid, whilst the easy praises of those more highly favoured by capricious Nature may pass unnoticed ?

It must ever be the dentist's aim to "be all things to all men" and while we remember the first part of Cromwell's sage advice and "put our trust in Providence" do not let us forget the important conclusion "*and* keep our powder dry."

Gentlemen my paper draws to a close, and my pleasure is to thank you for listening so patiently to what I trust will serve as a fingerpost by the way to some, even if it proves a bone of contention to others. In self-defence I must claim for my paper that it covers such a wide area that it has been impossible to touch on every point, and I can only hope that between the errors of omission and commission there may be ample scope for an interesting discussion.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE ORDINARY MONTHLY MEETING of the above Society was held on the 4th of April, Mr. David Hepburn, L.D.S.Eng., in the chair.

The CHAIRMAN expressed his regret that their President was unable to take the Chair as usual, owing to the recurrence of influenza, which he hoped was not very serious.

The Minutes of the previous meeting were read and confirmed.

Messrs. W. Palethorpe, of Birmingham, F. H. Ellwood, of Red Hill, T. Cooksey, of Worthing, Webster, Forsyth, Holford, Hodson and Geo. Hern were admitted Members of the Society.

Mr. G. Mansbridge, M.R.C.S., L.D.S.,Eng. was balloted for and duly elected.

Mr. C. W. West presented to the Museum some ancient dental implements, consisting of a pair of universal molar forceps and three elevators, remarking that the appearance of the latter led one to think that there must have been "giants in those days."

Mr. S. J. HUTCHINSON being called upon for a casual communication, said that he had met with a very interesting case in University College Hospital, the circumstances connected with it being of rather an unusual nature. It was a case of necrosis and fracture of the lower jaw, but he was unable to give a very definite explanation of the accident. The medical notes of the case also were not very complete, so that he would be unable to give them the full details of the case in the manner he should like to have done. One evening in February he was asked to see a patient, whom he found in a comatose condition with face and jaw done up in a bandage, there was considerable swelling on the left side of the lower jaw, and digital examination showed that very distinct crepitus existed. He decided to leave the case in the hands of the medical staff until he should be called in again. A few days later the patient died. He (Mr. Hutchinson) then endeavoured to obtain some history of the case, and some notes were given him from which it appeared that Mr. P. was a new patient who was admitted some 10 days prior to Mr. Hutchinson's final visit when he complained of pain in the region of the wisdom teeth, and the conclusion arrived at was that he had an abscess caused by irritation from the pressure from them. He had had the pain about a fortnight and it had become so excessive that he could hardly open his mouth. He consulted a dentist who removed the second molar and gave hot fomentations. The patient came back, however, a few days later, and the wisdom tooth was removed. On the following day he returned and tried to speak but fell down in a fit; he partially recovered consciousness and then had four fits in succession. Artificial respiration had to be resorted to, and Croton Oil was placed on the tongue, Bromide was also injected per rectum. As to the fracture of the jaw, it was necrosed through, besides having an abscessed cavity. The fracture which appeared to be transverse was not noticed by the operator at the time, but the impression was that it must have taken place during the spasms. The interesting part of the spasms was that they were all uni-lateral. When the patient opened his mouth he seemed to dislocate the right condyle. At the post-mortem the wall of the abscess was cut through and a considerable quantity of foul pus escaped. He (Mr. Hutchinson) was asked before the post-mortem if he thought it possible that the lower jaw could have been broken in extracting the molar, and he replied that he did not think it possible unless the jaw was diseased. The post-mortem discovered the fact that the ascending ramus was very much necrosed, but he did not think they would be justified in coming to any conclusion as to what stage of the proceedings the fracture of the jaw took place. He thought that such a case as this should be recorded on account of its extreme rarity and gravity, his only regret was that he had not fuller information to give them. In conclusion, he was sure that their sympathies would be with the gentleman in whose operating room the occurrence took place.

Mr. F. J. Bennett asked if the specimen had been preserved in the Museum of the University College so that one might inspect it?

Mr. HUTCHINSON regretted that the circumstances of the case prevented the authorities of the Hospital obtaining possession of any portion of the jaw, in fact he intended to have said that at one time he thought that it would have been possible for him to have been able to show the extent to which the ramus was necrosed, but he had been disappointed.

Mr. ALBERT remarked that he understood Mr. Hutchinson to say that it was a transverse fracture, if so he thought that would rather point to its having taken place during the spasms; it seemed to him most likely that it would occur during the contraction of the muscles of the jaw.

Mr. C. S. TOMES wished to ask what was the cause of death?

Mr. HUTCHINSON was sorry to say that he had no notes of the *medical* aspect of the case, he had confined himself strictly to the *dental* aspect.

Mr. IONIDES (a House Physician of University College Hospital), being present later, stated that the patient had had syphilis very badly, and had been successfully treated on iodide of potassium. He had also been under treatment for locomotor ataxy, and his kidneys were diseased. The immediate cause of death was urœmia, the result of the Bright's disease.

The CHAIRMAN remarked that it seemed to him to be a case of very peculiar interest, and he thought it very advisable that when possible these cases should be fully reported in their "Transactions." The apparent injury by the dentist when some troublesome circumstances follow an extraction was a question of very great importance. Allowance was rarely made for the condition of the patient, and they knew that when patients presented themselves suffering with necrosis or other disease of the jaw possibly some of the jaw would be brought away with the extracted tooth, but it was not the fault of the dentist. It was, therefore, important that such cases should be recorded as fully as possible. With regard to the possibilities of the fracture having occurred during the spasmodic contraction of the muscles, if they had the specimen they could then see the line of fracture, and the portion of bone burrowed into by the abscess, but without the specimen they could come to no definite decision. From Mr. Hutchinson's description it seemed to him that the spasms were almost like tetanic spasms.

Mr. Hutchinson said he would follow up the suggestion of the Chairman, and endeavour to obtain the clinical notes so that they might be embodied in the report.

Mr. M. Y. Woolf communicated a case of a tooth forced into the antrum and tolerated in that position for three years.

In November, 1888, a private in the 9th Lancers received a blow in the mouth from the kick of a horse, which cut deeply in the angle of the left cheek. The wound extended from just below the angle of the jaw in an oblique direction, severing the lower lid about ¼-in., and also severing the upper lip; a slight thickening of the cartilaginous portion of the nose suggested that the bridge might have been broken and two or three teeth were knocked out. Almost immediately after the accident, the staff surgeon stitched up the wound, but in spite of treatment there was considerable oozing of pus, either directly into the mouth or the pharynx.

The patient presented himself at the National Dental Hospital in September, 1891, when Mr. Woolf examined the mouth, and found the left upper lateral canine and both bicuspids missing. The tension of muscles owing to the contraction of soft tissues was so great that it was difficult to use a mouth mirror or to take an impression. A closer examination revealed an opening direct into the antrum, large enough to admit the tip of the little finger, in the position of the right second bicuspid. The left central was extremely loose, and presented the appearances commonly seen in cases of necrosis. Whether this central was covered with tartar, or with adherent necrosed alveolar process was a matter of doubt. All the teeth particularly those on the left side were thickly covered with tartar. Inferring the presence of a foreign body in the antrum from the symptoms, he explored the antral cavity with a silver probe, and found a hard substance lying in a horizontal position, which with a little perseverence he was able to move slightly, and then it fell into a favourable position near the orifice opening into the sulcus, and was without further difficulty removed by means of an ordinary pair of root forceps. The substance seemed to be the second bicuspid with a piece of tissue attached to it, which was highly vascular at the time on the removal, in spite of the fact that the tooth was entirely denuded of its root membrane, except at this point. Microscopical examination proved it to be purely a gum structure, and Dr. Maughan was of the opinion that it derived its vascular supply from the neighbourhood of the antrum. Mr. Woolf would be glad to know first how such a transplantation was brought about between these two tissues, and secondly, why in the face of a continual bathing in pus, which had the power of stripping off the periosteum from the surface of the tooth, this portion was enabled to survive? He should not omit to say that from the time of the accident to the removal of the tooth the patient had never been able to breathe through the left nostril, but immediately after the removal he was conscious of having regained that power. The treatment consisted in removing the tartar and syringing out the antrum daily with permanganate of potash for three weeks, at the end of which time the parts had regained their normal condition although the orifice remained patent. Models were taken and a plate made to assist in building up the contour of the face. Mr. E. W. Roughton who thoroughly examined the patient at the Royal Free Hospital kindly supplied the following notes:—"On looking into the left anterior nares a fibrous band is seen stretching across from the outer wall of the inferior meatus to the inner part of the floor of the nose. This band had probably been formed from granulations, the result of irritation caused by the tooth impacted in the inner wall of the antrum. On the right side there is a spur on the septum nasi and some hypertrophic catarrh conditions which of course have no connection with the affection of the maxillary antrum.

Mr. W. A. MAGGS thought there was no doubt that the very vascular tissue derived its supply from the antrum. He took it that the tooth was tolerated for so long a time because there was a free opening into the mouth; he thought that the substance surrounding the central and lateral was tartar, but the doubt could be cleared up by putting it into some acid.

Mr. F. J. VAN DER PANT wished to ask how long a time elapsed from the date of the accident to the time Mr. Woolf saw the patient?

Mr. WOOLF expressed his regret that Dr. Maughan had been prevented from being present to support him, because it seemed from a pathological point of view peculiar that this tissue should be gum tissue, he was rather inclined to agree with Mr. Maggs as to the tartar, as there was so much about the teeth generally. The periosteum was stripped off to a great extent and the tartar seemed to steady the teeth in position, consequently the patient had the idea that they were getting firm in the mouth. In reply to Mr. Van der Pant, three years elapsed between the accident and the treatment.

Mr. A. W. BARRETT gave a casual communication on "The

Electric Illumination of the Mouth for suspected Antral Disease," and said that the wording of his communication might suggest that he had come to bless the electric lamp, but his communciation was quite otherwise. Some three weeks previous a case was referred to him by Mr. Hovell to request him to puncture the left antrum for empyema which he believed he had recognized. The patient's history was that for the last four years she had complained of very offensive muco-purulent discharge from the right nostril into the back of the throat, it came on about 9 a.m. and lasted until noon ; in quantity it was equal to about a wine-glassful, there was no sudden rush, and no increase in the discharge from lying in any particular position. Her health had suffered in consequence, and she became very ill at times. On looking at the mouth Mr. Barrett found that the upper maxilla was almost edentulous, there being only a second molar standing, he removed a very small stump, but it was so inoffensive that it could not possibly have been the source of the trouble. When he saw her three weeks ago the mouth was perfectly healthy, he then used a very powerful electric lamp for oral examination, and got a complete illumination on both sides—the light passed with equal readiness through each cheek. The patient was seen by himself and by three other surgeons, excluding Mr. Hovell, and she was examined at four different periods of the day. The conclusion arrived at by himself and three colleagues was that the antra were both healthy, that one was as empty as the other, and they all ventured to dissent from Mr. Hovell. Mr. Hovell, however, held to his opinion, and at his request Mr. Barrett punctured the antrum, when the presence of disease was at once demonstrated. The lesson he learnt from this was that he should distrust the evidence of electric illumination of the mouth in attempting to diagnose antral abscess.

Mr. C. S. Tomes then read a Paper entitled "Studies on the Growth of the Jaws," and said that it was owing to the interesting discussion at the previous meeting on the anterior protrusion of the jaws that his thoughts had been led in this direction. There was in the museum of the Royal College of Surgeons a series of models prepared by the late Mr. Merryweather, taken from one mouth between the ages of four and twenty-one, at more frequent intervals in the earlier years, and less frequent in the later years. This series of models, so far as he knew, was unique, and Mr. Merryweather during his life had never allowed anyone access to them. They seemed worthy of being looked into with some degree of care. Of course the work done by Sir John Tomes and Professor Humphry in connection with this subject would be familiar to all. The most important generalization then drawn was that exceedingly little change and exceedingly little growth took place in the anterior portion of the human jaw, so that it happened that the bicuspids, incisors, and permanent canines occupy almost the identical position of their predecessors : they stand a little out but only a very little. Now this result was arrived at by the study of dried specimens and the jaws of different individuals, and therefore it was open to the possibility of certain fallacies, for the jaws that one got for such purposes were chiefly pauper jaws, and from children that have died in the workhouse ; it would not be certain that the jaw would not be puny, nor certain that a large proportion of them might not die before they were grown up. It seemed to him that it would be interesting to note what took place in one individual jaw, and he therefore set to work to examine Mr. Merryweather's collection of models. He took the width across from the centre of the masticating surface of the second deciduous molars in the upper jaws, and for length he measured from the middle of the back edge of the masticating surface of the same tooth up to the centre of the back of the neck of the central incisor on the same side at the edge of the gum. The reason he did this was that he thought he could best compare measurements in this way, either on the cast or the dry specimens. He measured Mr. Merryweather's series of models with considerable care, and so far as the upper jaw was concerned he found that it conformed to the conclusion already arrived at. When he completed this series of measurements he thought it would be interesting to see what happened during the growth of anthropoid apes—with specimens of which the Museum of the College of Surgeons is rich—and then he found that this state of affairs was not in the smallest degree true for the monkeys, that is to say that, in the absence of growth in the anterior region of the jaw, man stood alone. Of course in this case there were only skulls of different individuals to be obtained, but fortunately by taking the measurements from a good many individuals and averaging them they were sufficiently striking. The examination of these skulls proved the chimpanzee to be nearest to man in the matter of growth, the orang differing from him more, and the gorilla even still more. Then it became a matter of interest to see why. The chimpanzee had a dentition which rather more nearly approached the human than the orang or the gorilla ; in the orang there is a much greater sexual difference in the size of the animal, in the dentition, and in the length line, so that it would seem that this anterior growth of the jaw is correlated with the development of the canines. Then Mr. Tomes set to work to see how this growth took place, and to determine that he measured the intermaxillary bones, and found that this measurement was shortest in the chimpanzee. It did not occur very much in the chimpanzee, in the orang it occurred much more, and in the gorilla still more, so that one arrived at the conclusion that the anterior growth of the jaw progresses with the elongation of the intermaxillary bone. That brought out another item of interest : in man the intermaxilla is early obliterated, now in the chimpanzee it is a curious fact that the intermaxilla is not persistent, so that with the chimpanzee, with its more human dentition, one had this other human feature—the growth in this region did not take place. It would seem then that the growth in the region occupied by the temporary teeth is almost strictly dependent upon the intermaxillary suture. Seeing that the growth is mainly a pushing forward, not a growth in all directions, it comes about that one gets that squareness of jaw in apes and not in man. Then it results from this also that the absence of growth in this region is a strictly human character ; it is not shared by any other animal, and it depends apparently upon the early obliteration of the intermaxillary suture.

Returning to the series of models, there was another thing which resulted from an examination of them ; when one looked at the mouth at a later age, one found that it was not a regular mouth, that there was some degree of crowding. At first Mr. Tomes was disappointed as it seemed rather to upset the value of his conclusions, but when he came to look at it more carefully he was rather glad than otherwise, because while one lost in one direction one gained in another : when the upper incisors were erupted, instead of taking their usual slight forward inclination, they remained vertical, and that, putting on one side all considerations as to growth of jaw, would necessitate some degree of crowding ; this was accompanied by length of the lower incisors, so that the latter were given a distinct leaning backwards, which again was of itself sufficient to induce crowding in the *lower* jaw. The result of this crowding was that when the patient was about fifteen the upper bicuspid on each side was extracted. Now if anyone had seen that patient when he or she was twenty-one they would have said that the shortening was due to the extraction of the bicuspids, but when he (Mr. Tomes) came to look at the models more closely, a very interesting thing came out, viz:—that the dimunition was not a result of the extraction, but had commenced prior to it, when exactly the same teeth were on both sides of the mouth. Now that seemed a very interesting thing to him, because it seemed to show that the whole position was predetermined, and determined by conditions quite other than those connected with the extraction of the teeth. Just the same thing seemed to be happening in respect to the lower incisors, they took up their backward position sooner than they need have done; there seemed to be a tendency of growth independent of considerations of bite which set them in the wrong direction.

The study of these models then seemed to suggest two or three points which were well worthy of thoughtful consideration. In the first place, without wishing to build too much upon the value of the series of models of individual mouths, he, nevertheless, thought that so much might be learned from them, that those dentists who were able to take models of the mouths of their children, say from the age of 6 up to maturity, would do well to do so. One model a year up to the age of 14, and one every two years onwards would be sufficient, so that the trouble involved would not be very great. In the second place, might they not learn a lesson from these models against taking too superficial a view of the origin of irregularities, had they not here proof that irregularities originated much earlier than they were sometimes led to think, and this new view might lead them to more successful methods of combating irregularities. Thirdly, it was demonstrated that the early attainment of this full dimension of the anterior portion of the jaw is necessarily of a human character.

The CHAIRMAN in inviting discussion said that he feared the subject was one which they could better discuss after careful perusal of the paper.

Mr. F. J. BENNETT wished to ask whether Mr. Tomes had noted any increase in the growth of the jaw, the inter-maxillary not affecting it until a late period? What was the condition of the lower jaw in respect to this, how were they to suppose the lower jaw adapted itself to the upper jaw? It was difficult to understand as there was no similar suture in the lower jaw. He also wished to ask whether the increase was relative or actual?

Mr. A. W. BARRETT asked how it was that the square aspect was produced in the growth of the bone, looking at the diagram it rather suggested that it would give it a pointed appearance.

Mr. H. T. REED asked if the length was due to the prominence in the canine region?

Mr. ACKERY enquired whether there was any marked difference subsequent to the extraction of the first bicuspid, and owing to the centre of the mouth being shifted over to the left side?

Mr. W. HERN wished to know if Mr. Tomes had noticed whether the dimunition of length from the line of the temporary molar to the incisor had any relation to the eruption of the 12 years old teeth?

The CHAIRMAN said that the paper and the discussion upon it had very forcibly impressed upon him the enormous amount of information which Mr. Tomes had gleaned from this apparently simple set of models, showing how valuable such models might be, and how much knowledge might be got from them. He had only one question to ask, and that was with regard to the inter-maxillary bone, which Mr. Tomes had said after a certain age ceased to grow. He (Mr. Hepburn) had formed a sort of idea, which was that protrusion was principally associated with the inter-maxillary bone, and that it reached its greatest development about the age of eight, if the natural growth of the bone ceases before that period, that would not preclude the possibility of abnormal growth taking place afterwards, it might account for the protrusion of the teeth. He should like to know if Mr. Tomes had formed any opinion as to the real seat of the increase of bone, whether it arose from pressure, or from abnormal proliferation of bone cells?

Mr. TOMES said that before replying to the various questions, he should like to say that he omitted any reference to the prognathism of the African races, whether there is any persistence of the intermaxillary suture to a later date than in European races; it was an interesting point, but the material for investigation, so far as he was aware, did not exist in pre-adult life—there were plenty of adult specimens, but very few babies—possibly in the American Museums there might be such specimens. Mr. Paterson had mentioned that he had an adult skull in which a suture was persistent. Of course such skulls were found here and there, but he was not quite sure if that would affect the argument very much. Supposing a suture which is normally obliterated did remain, it does not follow that the growth is going on. There are plenty of sutures which remain sutures, but no growth was taking place. They had no material to say whether the irregularity which they called anterior protrusion was or was not due to this cause. He had read this short paper because it seemed to him to hang naturally to the discussion which had taken place at a previous meeting. Several questions had been asked about measurement. Mr. Bennett asked whether the dimunition was relative or absolute. Well, it was both, it was absolutely less in the adult than in the child of six, but as Mr. Ackery pointed out there was a shifting of the centre, and Mr. Tomes thought there was a *vis-a-tergo* that side which shifted the teeth forward. All that he wished to emphasize was that the ultimate diminution, which was pretty large, might have been due to the extraction, yet this diminution was beginning at a time when no such condition was to be seen. Then he had been asked as to the prominence of the canines. Well, with reference to that they were rather prominent, but they ultimately became fairly regular. He should like to endorse Mr. Hepburn's remark, who had anticipated what he intended to say, viz:—that sets of models of the same mouth at different periods of growth would be most valuable. He thought there was nothing apparently to be learnt prior to the age of six, from that age up to twelve yearly models might be taken, so that it would not be a very laborious matter, and unless he was very much mistaken there would be much to be learned from them. Mr. Barrett had spoken as to the squareness of the jaws. In presenting the matter to them very briefly, he (Mr. Tomes) had perhaps made it too diagrammatic, and possibly overstated it in his desire to be clear, and Mr. Maggs had pointed out that the existence of the large diastema also pointed to considerable squareness. Mr. Tomes was afraid that he did not make himself quite clear about the chimpanzee. It has the most human dentition, and it is the only ape in which the inter-maxillary suture becomes obliterated at an early age. The usual votes of thanks concluded the meeting.

Students' Society, London Dental Hospital.

ORDINARY GENERAL MEETING, held Monday, March 14th, 1892, Mr. W. B. Paterson, President, in the chair. The minutes of the previous meeting were read and confirmed. On Casual Communications being called for—

Mr. HOLFORD showed a wisdom tooth very much compressed antero-posteriorly and flattened throughout from the crown to the root, and the confluent roots also curved backwards.

Mr. Mosely exhibited a living dog in whose mouth there was growing from the upper jaw a pedunculated tumour, or epulis about the size of a cherry and at the same time showed models of the mouth. The tumour occurred immediately behind the left canine, and between it and the first premolar. The animal, a terrier, although lively was a tractable patient. He also produced the model of an upper jaw, the laterals of which had exaggerated cingula so much so that the patient was under the impression that a second tooth was erupting behind each.

Mr. Parris brought forward a model of the upper jaw of a patient aged twenty-three years, the temporary canine on the side affected was in good position, and the permanent canine had not appeared.

Mr. C. Gardner showed a case of conical supernumary teeth in the molar region of a patient thirty years of age, and also a model of a patient aged twenty-five, with two temporary molars on the right side and one temporary canine on the left.

Mr. Danolds showed the model of a patient's mouth of the age of forty-three with the retention of the second temporary molar in the lower on the left side.

Mr. Prideaux also brought under notice the retention of a canine temporary tooth in the upper jaw, the permanent laterals in the upper being absent, age of patient twenty-five, no other members of the family were abnormal or deficient in their number of teeth he believed, but he would further investigate the matter at the president's desire.

Mr. Goodman showed a lower canine which had been extracted in the dissecting room, with two well marked roots. In answer to the president, he stated that the companion tooth had been removed, and he therefore was unable to speak of its root.

Mr. Tomlinson exhibited two upper central teeth of the true syphilitic type, from a patient, the subject of the inherited form of that disease. The president remarked that no other teeth were altered in shape on the model.

Mr. W. Hern described a case which had come under his notice in which there was unilateral paralysis of the soft palate, such a case being very rare, it was first considered to be a perforation of the palate and was apparently treated as such previous to being seen by him, the patient was now undergoing treatment by electric currents applied to the affected side; the affection is supposed to have followed an attack of scarlet fever which occurred some fourteen years since. When the nostrils were plugged, the patient was able to speak plainly, but when allowed to be open, speech was affected like that in the case of cleft palate.

The PRESIDENT thanked Mr. Hern for bringing forward his communication and presumed it was a result of necrosis of the internal ear's bony walls implicating the facial nerve in its passage through the petrous portion of the temporal bone from scarlet fever. He narrated briefly a similar case of palate paralysis following a fracture of the base of the skull, involving the petrous portion which he had seen in a man who recovered from the accident with deafness and general facial nerve paralysis on the injured side, and he drew attention to the value of the case as showing the nerve supply of the muscles of the soft palate chiefly affected, to be derived in part from the facial nerve, doubtless through the petrosal branches going to Meckel's ganglion. The speech difficulties were such as were commonly associated with facial paralysis in that case; and the deafness resulted from the injury to the auditory nerve. The treatment was unsatisfactory.

The PRESIDENT then called upon Mr. Northcroft for his paper on the "Management of Patients." *See page* 202.

The PRESIDENT quite shared the feeling of the meeting with regard to the paper as demonstrated by the applause it had received. He was glad Mr. Northcroft had not taken him literally at his word and produced the highly scientific paper referred to, for thereby they would have been deprived of an excellent display of eloquence and a charming paper.

Mr. J. P. SMITH in opening the discussion congratulated the author on his excellent paper. He had before coming to the meeting wondered what could be written on such a subject, however, he could only endorse all that Mr. Northcroft had said, and expressed his opinion that the great thing was to gain the confidence of the patient and with that much could be done; he pointed out that one should never hesitate or contradict onesself, and to avoid this it was better not to say too much. In the treatment of children he advised that they should never be deceived, but be told exactly what was to be done to them; the use of the engine he had found preferable to the use of excavators in children, as it was a novelty to the child and a source of amusement, in this way fear was quieted.

Mr. Mordaunt was rather disappointed that Mr. Northcroft had not touched upon the extraction of fees, and asked for information as to the best way of getting them, gracefully, he added at the President's suggestion.

Mr. Gabell asked if it were necessary for a third person to be in the operating room always, for personally he had found such attendance often a source of trial to him from troublesome interruptions and questions.

Mr. L. Matheson thought it necessary that all those engaged in the practice of dentistry should carry with them into daily work a gentlemanly demeanour, and that the dentist's efforts should always be devoted to the good and benefit of his patients, regardless to some extent of the strictly commercial point of view—at the same time the work done should be done to the best of his ability, which always paid for itself in the end ; he pointed out that no two patients could be treated exactly in the same manner, what would suit one would not suit another, and a wise discretion should be used, the practitioner should not always refuse to be guided by the opinion of the patient, but should pay respectful heed to what was said, as often something useful might be learnt bearing upon treatment. In the treatment of nervous patients one should never say one thing and do another, by this means the patient's confidence was lost, and particularly with children was this the case. In closing his remarks he expressed his great satisfaction with the way in which the paper had been treated, and was pleased to say it was one of the best that he had ever listened to at the Student's Society meeting.

Mr. W. Hern coincided with all that had been said of the paper, and was afraid that that there was not much else to say, but at the same time he would reiterate that work done at all should be done well ; as Sir John Tomes once said on entering the hospital unexpectedly " Well ! gentlemen you must either be always doing good work or else always apologising for the bad." He endorsed the previous speaker's remarks concerning the confidence of the patient especially in children, who, as was said before, if once deceived would never give back that confidence which we all should so zealously strive to retain in our patient. It was much better then to tell the patient when he or she was about to be hurt. He also, as it had been alluded to by a previous speaker, touched upon the subject of the " extraction of fees " and would quote what a well known dentist used to do when the patient had omitted to pay him, viz: when the patient was about to leave the room, say, with his back to the door, "Do you wish me to make a note of this visit," and that generally produced the desired effect.

Mr. Peall, in rising, said it was difficult for him to remark upon the paper as it covered so wide a field, he generally agreed with it, and as a practitioner he suggested it was wise diplomacy when a patient came with a toothache to have the tooth saved, instead of probing and excavating at the first visit; some soothing light dressing should be applied as a palliative treatment, for it produced a better effect on the patient, inasmuch as it relieved the pain in the tooth, which was the great thing, and gave courage to the patient and confidence in the operator to have it excavated and filled at the next visit.

Mr. Tomlinson since he had had a tooth extracted lately, had noticed how much more sympathetic in his treatment of patients he had become.

Mr. Densham observed that he thought it the duty of every dentist calling himself a gentlemen to never in any way, slight or wilfully disparage another man's work before a patient, however good cause there might be; of course he referred to honest work. It was a bad habit of many dentists, and could not too strongly be discountenanced by all members of the Society and Hospital.

Mr. Parris wished to inform the society that he received on one occasion the sum of sixpence for extracting a lower molar from a patient, and desired to know what Mr. Northcroft would have done in the circumstances.

Mr. V. Hope in an amusing speech dilated upon the various aspects of the fee question, as represented by the West End guinea and the lowly "bob," and by way of advice imparted the information that much might be learnt from the patient's demeanour as to the fee to charge, and that even the use of two such phrases on his or her part as "how much?" and, "what is the fee, please?" simple in themselves, conveyed a wealth of meaning on the subject by the patient to the dentist, indicating often a shilling or half-a-crown by the first phrase, and five or more by the second, as the safe course to steer in making a fee.

The President expressed his gratification with the lively interest shown by the members in the discussion which had taken place. Some might consider the paper perhaps idealistic, but it was well to have such a good ideal set up before them, and he strongly recommended the paper to this careful consideration as eminently practical and useful. With regard to the fee question alluded to by various members, he did not look upon it as urgent for them at least, at present. And he did not think much harm would accrue if members when starting as practitioners did at first underrate the value of their skill. A little experience would soon teach them to properly estimate the value of their labours and the error would be corrected. The matter scarcely came within the scope of the paper. He then called upon the author to reply.

MR. NORTHCROFT then proceeded to thank the President for the kindly manner in which he had assisted him to reply, by his references to the difficult and thorny question of fees. In answer to questions he quite agreed that a third person should be in the room beside the patient and dentist when an anæsthetic was being given: *e.g.*, doctor or patient's friend; and in answering Mr. Gabell thought that if a book or paper were given to the friend of the patient he conplained of, and a seat offered at the end of the room the trouble would be removed; he thanked Mr. Hern for the hint he had given respecting the extraction of the fee, and also Mr. Smith and Mr. Matheson who agreed with him, concerning the use of the engine on children; as regards Mr. Densham's remarks on professional etiquette, he had to apologise for leaving such an important item out of his paper, and quite agreed that it was extremely bad form to run another man's work down, he often wondered why dentists did not back one another up more in this way as doctors did in the professions of medicine and surgery. Reviewing Mr. Parris's experience when offered sixpence by a patient, he would have given it back to the patient with the remark that it pleased him to give his services for nothing; in answering Mr. Hope on the fee question, he said it was not everyone who could practise in the West End, he, Mr. Northcroft, personally thought it was rather a good thing, that we did not all practise there, there being plenty of room in other places. He thanked the members for the reception they had given him and his paper.

THE PRESIDENT then proposed a vote of thanks to Mr. Northcroft and to those gentlemen who had kindly brought forward casual communications, which was carried with acclamation; and announced that the next meeting would be held on May the 9th, when Mr. Mosely would read a paper on "The Preparation of Cavities."

The proceedings then terminated.

THE DENTAL RECORD, LONDON: MAY 2, 1892.

CHANGES IN THE JAWS OF THE HUMAN RACE.

Dr. Eugene Talbot has acquired a well merited reputation both in his own country and in England, and his writings upon matters connected with the distorted growth of the jaws command careful attention. In the pages of our contemporary the *Dental Cosmos,* Dr. Talbot writes upon the degeneracy of the jaws of the human race, and gives his readers some useful food for reflexion. Very properly he points out that social modifications must be studied in two aspects, both as to what has been *added* to the osseous, or other system, and also what *loss* or modification in the direction of loss has occurred. Evolution teaching, applied to the question before us, makes much plain, which without its explanatory aid, must seem to be unaccountable. In the orang and the chimpanzee the necessity for a powerful bony substructure for the face leads to a massive osseous development conspicuously absent in man, in whom the muscles passing between the head, face, and jaws are comparatively slight. But although such a marked difference exists between beast and man, a glance round a museum or good anthropological collection, reveals that as striking a contrast exists between men and men, between let us say as Dr. Talbot points out, the typical negro and the working-class American. Such changes we are told mean a change in racial habits from arborial life to the life of man, from the rough and tumble of daily manual labour to the existence of the class men who generation after generation work with their brain and give their hands and their jaws more or less of a holiday. "High education and brain development, without a corresponding physical training," result in a fully developed cerebrum and a weak physical structure. "The race is increasing in grace, beauty, and intellect," we are told. Diet, like other things, has contributed to the beautifying power, or has at least contributed to bring about a weakened biting apparatus as the efforts of our cooks tend to lessen the necessity for our possessing jaws which like those of Little Red Riding Hood's vulpine relative "are better for eating with." Dr. Talbot compares portraits of individuals of four generations, and traces in them the changes on which he insists as occurring under the regime of civilisation. To follow our author through his interesting paper would be beyond our scope, nor could the reader derive so much advantage from our so doing as must accrue if he reads the articles in their entirety. Much that Dr. Talbot urges is good plain common sense, and although some of his statements may require modification, yet the utility of his generalisations will remain. The truly scientific contribution to what is really a part of the question before us, which Mr. Charles Tomes read before the Odontological Society of Great Britain, and which we publish in abstract on a preceding page should be carefully read in this connexion. The problem whether the jaws are truly undergoing a degenerative change, degenerative in the sense of losing their massiveness and facilities for muscular attachment and powerful movements will hardly be understood until worked at upon broader lines than has at present been attempted. The comparison of individual with individual must be supplemented by placing side by side models of the development of the teeth and jaws of the individual at various ages. The child in this sense is emphatically the father of the man, for, although growth may and possibly will be largely influenced by environing conditions, air, food, general hygiene leading to good or bad nutrition, yet inherited traits will determine the lines along which such growth must take place. Nor is the subject one devoid of practical importance. We are only too painfully aware how common irregularities in the mouth are at the present day, that their occurrence is moreover ever upon the increase, and in treating these cases we cannot but derive the greatest assistance from a right appreciation of the causes which lead to their development, whether they be the result of heredity, of faulty nutrition, or a steady degenerative change taking place in the racial type, and due to complex, and at present but imperfectly understood forces.

GOSSIP.

The Registers for 1892.—The Registrar of the General Medical Council has been good enough to forward us copies of the Medical, Dentists' and Medical Students' Registers.

In anticipation of the election of direct representatives to the Medical Council, the *Medical Register* has been revised with more than ordinary care, letters of inquiry as to accuracy of address having been sent, early in 1891, to every practitioner registered in England. By this means a large number of altered addresses was ascertained; and, in addition to these corrections, many more were subsequently obtained and inserted in consequence of the voting papers which were issued in November.

The number of practitioners registered during 1891 has somewhat increased, being 1,345 as against 1,266 in 1890; but deducting from these the removals from the Register, owing to deaths, and other provisions of Sect. 14 to the *Medical Act* (1858), the total addition of names to the Register, including restorations, is 392; thus the total now in the Register is 29,555, as against 29,163 in 1891. Of the new registrations, 683 were effected in England, 502 in Scotland, and 160 in Ireland.

The registrations of Colonial Practitioners under Part II. of the *Medical Act* (1886), now number ten.

The *Dentists' Register* for 1892 will be found to contain 79 persons more than that of 1891, thus making a total of 4,896, of which total 1,179 practitioners (*i.e.*, 24·07 per cent.) possess the qualification of Licentiate in Dental Surgery, while 3,698 (*i.e.*, 75·55 per cent.) are registered as "in practice before July 22nd, 1878." This shows a marked diminution, continuously going on, from the percentage (90·87) of those so registered appearing in the first Register published in 1879.

The number of Foreign Dentists now registered is 19, or nearly ·4 per cent. of the whole.

The *Medical Students' Register* shows that 2,405 students registered in 1891. This is the maximum hitherto recorded, being 559 more than in 1890, and a higher number than has ever been reached in any previous year. This may be accounted for, no doubt, by the new regulations with regard to a five years' professional course that came into operation on January 1st, 1892.

Selection.

ANTISEPTIC METHODS IN DENTAL SURGERY.*

By W. F. Reyfuss, D.D.S.

The methods of employing antiseptics in dentistry are by *irrigation*, *disinfection*, and as *antiseptic dressings*. First. *Irrigations :* the washing out of tooth-cavities, bathing infected and inflamed surfaces of wounds, syringing out abscesses, the use of mouth washes, &c. For irrigating purposes drugs in concentrated solutions are never applicable ; diluted aqueous solutions are always indicated. Second. *Disinfection* : the destruction of micro-organisms and the products of putrefaction in tooth cavities, pulp-canals, or wherever necessary. Disinfection may be either immediate or gradual, according to the character of the drug employed. Escharotics, the class of drug used by the immediate method, should not be applied to living tissue, at least never directly on a living tooth pulp, unless devitalization is desired. By the gradual method a diluted solution, a non-escharotic antiseptic, is used, or essential oils, because of their permanency. These are allowed to remain in action for a period of time sufficient to gradually destroy the bacteria. Disinfection includes the sterilization of instruments. Third. *Antiseptic dressings* may be either temporary or permanent,—temporary, when an antiseptic action is desired for a limited period ; permanent, when the intention is to have such action constant. These dressings are used in the form of powders, on cotton, as a paste, or incorporated in filling-materials. The following classification embraces such as are most frequently employed. The method of grouping them will serve practical purposes. 1. Acids, organic (vegetable) and inorganic (mineral). Organic acids, such as carbolic, benzoic, salicylic acids, applied to both tooth-structure and tissues. Inorganic acids are employed only on diseased tissues, never on tooth-structure. For antiseptic and disinfecting purposes they are used in five per cent. and ten per cent. solutions, and include nitric, sulphuric, hydrochloric, boracic, and chromic acids. 2. Iodides : tincture of iodine, aristol, iodol, aseptol, potassium iodide. 3. Mercurials : biniodide and bichloride of mercury. 4. Oxidizing series : hydrogen peroxide, potassium permanganate. 5. Oxygenated essential oils, cajuput, peppermint, thyme, cassia, cloves, eucalyptus, juniper-berry wintergreen, &c. 6 Wood and coal-tar series : creasote, hydronaphthol, resorcin, &c. 7. Heat: All of the antiseptics enumerated in the classification can be used in the treatment of tissues. Acids must be diluted until they lose their caustic properties. Mercurials should be used in sufficiently weak solutions to render them non-poisonous to the system. The essential oils are employed in emulsion with bland oils if necessary. The method of application and purposes of antiseptics in dental surgery must be governed by the anatomical structure of the part and its physical condition. Inflammation of tissues may be either acute, perhaps septic, or putrescent. Each condition requires its own particular and special class of antiseptics. One method or a single class cannot be adapted to every pathological condition. Different antiseptics must be employed, and the methods varied to conform to the especial requirements of the case. Thus, in a tooth having its pulp living, the minute nerve-filaments thereof ramifying through the dentine, it would not be advisable to employ the same powerful antiseptic as when the pulp is devitalized, and the tooth is what we commonly term a dead tooth. The diagnosis of the condition of the pulp should be accurate, upon it depending the subsequent treatment. If it is a simple inflammation of the pulp,—acute pulpitis,—a sedative should be applied, never an escharotic at this stage. After the pain is relieved, an antiseptic dressing should be left in the cavity. The method of treatment is the same if decay has progressed to the pulp and caused its exposure. Assuming that such treatment has reduced the inflammation of the pulp, at a subsequent operation the decayed tissue is excavated from the cavity, which must be sterilized before filling. In the sterilization of tooth cavities escharotics should not be employed when but little dentine covers the pulp, because of the possible danger of devitalizing it. Essential oils are indicated, oil of cassia being the most efficient, in my belief. As it is volatile, it penetrates the dentine thoroughly and does not destroy tissue. If escharotics are employed and the pulp is living, they should be diluted with glycerin, but if the pulp is devitalized the circumstances are different and these precautions are unnecessary. The cavity must not be simply swabbed out whatever antiseptic is employed, but time given for its action. I thoroughly endorse Professor Miller's views, in this matter. The sterilization of tooth cavities by the temporary-dressing method insures the destruction of the micro-organisms. Again, I have adopted the use of permanent antiseptic dressings, which are inserted in the bottom of the cavity, and then covered with the tooth-filling.

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* Abstract in "*Dental Cosmos.*"

These dressings consist of oil of cassia and iodoform incorporated with an oxyphosphate of zinc filling. Eucalyptus or other efficient antiseptics may be substituted for those advised. These methods can be varied and different antiseptics employed. I believe and contend that many unsuccessful pulp-cappings are due in part to the lack or neglect of antiseptic treatment, or because such treatment has not been properly or faithfully pursued, giving rise to inflammation, sepsis and consequent devitilization of the pulp. The use of escharotic cappings is also responsible for many failures. The capping placed directly in contact with the pulp causes a devitalization of the superficial tissues. It is an open question as to whether the pulp will absorb this devitalized tissue or whether the escharotic will keep the pulp in an aseptic condition. It is universally conceded that previous to capping a pulp it should be in a healthy, normal condition. I have capped such pulps with a paste of carbolic acid, iodoform, and oxide of zinc, or substituted creasote for the carbolic acid ; and also have used oxychloride of zinc iodoform experimentally. Subsequently, to substantiate my belief that superficial devitalization is produced by such treatment, I have removed the cappings, and instead of the normal pink color of the pulp, found at the point of the capping a shade vary from a dirty reddish brown to a peculiar putty color. My present method consists in first arresting the hæmorrhage, if the pulp is bleeding ; it is next sterilized with bichloride of mercury (1-2000), and then dried thoroughly with hot air. The surface of the exposure is brushed with a solution of collodion, iodoform, and eucalyptus. This forms an antiseptic film or skin. When it is dry, another film is added, and this is followed by a third of the same solution, containing, in addition balsam of Peru, which strengthens the non-irritating covering of the pulp. A piece of goose-quill or a platinum cap with an antiseptic paste covering to hold in place, is sometimes added to prevent pressure of the filling on the exposure. If it be decided to devitalize the pulp, the method of using iodoform with the arsenic, suggested by Professor James Truman is advantageous. After the removal of the *debris* from root canals, they are to be sterilized. There are several stages in this process. The first is disinfection, using any one of the disinfectants, excepting mineral acids, and usually in full strength, my preference being for bichloride of mercury (1-500). If all traces of the pulp have been removed from the canals, and they have been disinfected, also if there is no apical periodontitis, the indications are favorable for immediate root filling ; otherwise the canals should be dressed with antiseptics until such conditions exist. The thorough drying of the root canals is one of the most important principles in their treatment, because moisture is a factor in the production of germs and putrefactive processes. Within the past eight months I have readopted a method of filling root canals with antiseptic waxes, which was my practice three years ago, but which I abandoned without a proper recognition of its merits. The wax consists of paraffin and resin, combined with any antiseptic, and in whatever strength desired. The method of making the wax is to melt one drachm of paraffin and half a scruple of resin (white) in a porcelain dish, and then add the antiseptic in the proportion desired, the wax acting as a vehicle. It is then thoroughly stirred, poured into moulds, and allowed to cool. Small pieces of the wax, in cone shape, are placed in the pulp chamber, and a canal instrument or broach is heated in the flame of an alcohol lamp and inserted in the mass, thus melting it. The instrument is reheated, and inserted in the canal. The wax will flow to the apex. Quickly withdraw the instrument, and the wax hardens, hermetically sealing the apical foramen. The use of the electric cautery facilitates the introduction of the wax. The superiority of such a root-filling must be recognized. Its antiseptic properties must commend it, aside from its physical properties of easy manipulation, and entire conformity to the part, filling as it does every portion, penetrating the openings in the tubuli of the dentine. To resist the action of micro-organisms, it is necessary that this constant antiseptic action is not confined alone to the root-filling, but extended also to the cavity-filling. A more efficient method of ensuring antiseptic action in a tooth-cavity would follow the production of a chemically antiseptic plastic filling-material. Accepting the chemico-parasitic theory of dental caries, I believe the ideal tooth-filling of the future will be one of that character. The advantages of such a filling would be manifold. A filling possessing continued antiseptic power, providing its physical properties, durability, colour, etc., were satisfactory, would fill the requirements of an ideal filling. Oxyphosphate or zinc cements are not antiseptic, but it is my custom to render them so by incorporating with the cement one of the essential oils, or hydronaphthol, iodoform, aristol, etc. In mixing the cement, four drops of the phosphate liquid are placed on the mixing slab, and one drop of the oil of cassia or eucalyptus is added. These are thoroughly mixed before incorporating the powder in the usual manner. If a powder, such as hydronaphthol or iodoform, is used, it is first incorporated in the cement powder before mixing the filling. The hardness or stability of the filling will not be deteriorated by such treatment. Amalgams can be washed with oils of cassia, which cleans out the oxides perhaps better than water or alcohol. The amalgam is first well mixed in a glass mortar with a slight excess of mercury; several drops of oil of cassia are added, and the mass is again well triturated. It is then dried on a napkin before squeezing out the excess of mercury. The oil of cassia is not incorporated chemically in the filling, but the odour can be detected in all portions of it. The same principles can be applied in the use of the phosphate cements. Gutta-percha may be treated in the same manner, heating it and mixing with the oil of cassia or cajuput, which dissolves it, though it subsequently rehardens. These methods are not advocated as specifics in the prevention of recurrence of caries, nor are they to be recognized as the ideal antiseptic filling, but merely as a practical experimental step in the proper direction, and a method of filling whose fundamental principles must eventually be adopted. The diseases believed to be induced by the presence of bacteria include pyorrhœa alveolaris, alveolar abscess, periodontitis (in some forms), forms of stomatitis, gingivitis, suppurative processes of the margins of the gums, thrush, etc. Controversies as to whether alveolar abscesses are caused by bacteria have resulted in the universal acceptance of such belief. Miller defends this view. His theory is sustained by the fact that an apical alveolar abscess is produced by an inflammation of the pericementum caused by a septic condition of the pulp, and sepsis is a sure indication of the presence of bacteria. The etiology of pyorrhœa alveolaris is shrouded in mystery. Some contend that it is due to constitutional diseases, others to local irritations and disturbances, while a few are inclined toward the belief that the disease is probably of parasitic origin. Whatever its origin, undoubtedly in the majority of cases bacteria are present in large quantities. To them Miller attributes the pus incident to this disease. In these cases the predisposing cause should be treated, whether of constitutional or local origin. Calcareous deposits should be removed from the roots, and the pockets irrigated with antiseptic solutions. Hydrogen peroxide will be found valuable to remove all oreign matter and pus from the pockets between the teeth and around them. Follow this treatment by the application of some tissue-destroying agent, either carbolic, sulphuric, or nitric acid, iodide of zinc, nitrate of silver, etc.; irrigate again, and apply an antiseptic dressing. Constant antisepsis by syringing with antiseptic washes is indicated; and this treatment should be more vigorous than in alveolar abscess treatments, because the fluids of the mouth are constantly bathing these parts, and thus the danger of reinfection is considerable. In the treatment of the lesions of the oral mucous membrane, such as stomatitis, thrush, uvulitis, etc., the same antiseptic methods must be followed, regulating the treatment according to the symptoms and character of the disease. Ulcerated conditions and sloughing tissues require more vigorous and constant treatment than simple inflammatory conditions. Every oral surgical operation should be performed under antiseptic conditions, because of the danger of inoculation of the wound through the medium of instruments infected with the bacteria in the mouth, causing perhaps inflammation, suppurations, and necrosis, which are not infrequently the cause of septicæmia and pyæmia, which have resulted fatally. In ordinary operations such as extraction of the teeth, lancing of the gums, etc., antiseptic precautions are not absolutely necessary, but are a safeguard. Antisepsis requires cleanliness in every step of an operation, so that no germs may be carried to it, particularly through the agency of infected instruments. Aside from this reason, there is the possible danger of inoculating patients with specific diseases, the virus of which may have been left on the instruments after operating on the preceding patient, the knowledge of such a condition being entirely unknown to the operator. Many cases of this kind are recorded, hence all cutting instruments, whether excavators, lancets, engine-burs, knives, probes, etc., should be thoroughly sterilized. The methods of sterilization are simple, and require but a short time. The instruments are placed for a few moments in a five, ten or fifteen per cent. solution of carbolic acid, kept in covered porcelain dishes. The solutions are convenient, and can be renewed when desired. A more preferable method, if time permits, is to place the instruments in boiling water and allow them to remain five minutes, or heat them in an oven. These are undoubtedly the most reliable methods of sterilizing instruments. Engine-burs may be placed on a covered dish containing alcohol, kept for the purpose on the operating table. Before using burs they may be laid or dipped in the solution. Revolving in the engine hand-piece immediately dries them by evaporation. Mouth-washes are of value for general antisepsis of the oral cavity. They may consist of listerine, hydrogen peroxide, eucalyptus, bi-chloride of mercury, thymol, and various other antiseptics, formed into various effective combinations to fulfil the requirements of the case. In conclusion, it must be recognized that as the oral cavity is the breeding-ground of the bacteria, strict asepsis must be observed in all dental operations and treatments, otherwise uniform success cannot be expected. Whatever changes may occur in our methods of operation in the future, antisepsis will always remain the fundamental principle of dental surgical treatment.

Journalistic Memorabilia.

Light for the Dentist.—The pith of some of the remarks of Dr. T. W. Brophy in *Dental Review.*—Light is composed of —photogenic, actinic and calorific rays. The calorific ray of the sun exerts a healthful influence on animal and vegetable life, incomparable with heat emanating from other sources. Reference to cellular plants and closely-housed people will vividly portray the effect of the absence of the calorific element of light.

The function of the actinic ray is to produce chemical changes.

The application of light to practitioners of dentistry, should be considered from two standpoints.

1st.—Its management in the performance of operations in the operating rooms, and its uses in the laboratory.

2nd.—Its influence in promoting health.

We must keep in mind the fact that rays of light, as projected from their source, are straight or slightly undulatory.

We may perform our operations on the teeth more successfully, with greater facility and ease to ourselves and patients, by applying direct rays of sunlight to them.

The dental operating room, instead of being selected with great care as to its arrangements for receiving light, is too frequently poorly lighted, poorly ventilated and deficient in many conveniences seemingly indispensable.

The operating room should be lighted from the south by *one window only*. It is, I believe, a very great mistake to admit light to an operating room through windows opening in different directions. Light from an octagon front, or, more objectionable still, a cross light, as from a south window and an east window, should be avoided. Refracted rays, thus employed, impair the focusing power of the eye, and vision becomes disturbed, the eyes weary, eye strain follows, headaches are frequent, and sometimes almost constant ; other nervous maladies are observed, and the general health of the dentist, in consequence of badly arranged light, may irreparably suffer. The paper on the wall of the operating room should be dark, preferably drab, so as to absorb light and not reflect it ; this I regard as essential in preserving the eyes, the operation is better lighted, and therefore may be more perfectly performed.

Light admitted to the operating room may be deficient or excessive in quantity.

A window facing the south from forty to sixty inches in width and from seven to nine feet high, with glass set on a line with the outer surface on the wall of the building, with no shadow cast on it from buildings on the opposite side of the street, or trees, affords us the most satisfactory light obtainable. By the use of white and dark shades arranged so as to be adjustable to any part of the window we may tone the light as we desire.

No more light is required in an operating room for one operator than such window ; it is usually necessary to adjust the shades so as to darken a portion of the window to get the best effect.

The operating room should not receive a *glaring* light. *Glare* taxes the eyes and leads to visual disorders.

It has frequently been recommended that a sky-light be employed for the laboratory ; while the soft light from the sky-light may be quite satisfactory to the performance of laboratory work, I believe the prosthetic dentist should not occupy a room from which the sun's rays are excluded.

Artificial light in the operating room should be employed only for diagnostic purposes. The light of day only should be used for the filling of teeth. It may be possible in favourable cases to fill a tooth well by artificial light, but no dentist can afford to tax his health and strain his eyes in so doing.

The employment of electricity as an illuminating agent has placed at our command a most valuable adjunct to operative dentistry.

Mention of the use of electric light for oral examinations was made in 1866 before the Paris Surgical Society.

" Prof. Burns, of Breslau, exhibited a new instrument to be termed the stomatoscope. A platinum spiral wire (inclosed in a boxwood cup, to prevent the transmission of heat) brought to a red heat by the passage of an electric current from two of Middeldorf's elements, is placed in the mouth behind the teeth.

" The light reflected by a very small mirror is sufficiently intense to render the jaw transparent so as to allow of the vessel proceeding to the roots of the tooth, the smallest speck of caries, etc., becoming visible.

"By reason of the transparency, even the labial coronary artery may in some subjects be seen at the level of the commissure and its course followed. The instrument is therefore likely to form a useful means of exploration in dental affections." This description of the electric mouth light, twenty-four years ago, while read by many, was little regarded, but the prediction that it would be useful for diagnostic purposes has been amply verified.

Dr. BEACOCK writing in *Dominion Dental Journal*, says:—Buy a sheet of carbon paper at any stationer's, and cut it up into three or three-and-a-half inches long by three-quarters wide; this makes just as good articulating paper as any you can buy at the dental depots, and not one-twentieth the cost. There is a red kind which I use, and find very useful in certain cases. In fitting teeth and crowns, this carbon paper is almost indispensable for getting nice adjustments.

SOZODONT.—T. S., Philadelphia, in *Dental Office and Laboratory*.—A similar preparation may be made, it is said, by the following formula: Castile soap, (white) ½-oz.; oil of peppermint 5 drops; oil of wintergreen 12 drops; Glycerin ½-oz.; Water 1-oz.; alcohol 2-oz. Cochineal mixture, sufficient to color.

Quillaia is sometimes used in similar mixtures instead of soap; but the soap is preferable, as quillaia is a very irritating substance, and its active principle, saponin, is credited with being a decided poison.

A DOMESTIC BAROMETER.—According to the *Gaceta de Obras Publicas*, quoted in the *Optician*, a cup of pure coffee, with the addition of a lump of sugar, forms an excellent barometer. The sugar, according to our authority, should be put into the coffee without stirring, and a moment afterwards a quantity of bubbles, due to the air contained in the sugar, will be seen to rise to the surface of the liquid. If the bubbles collect in the middle of the cup the weather will be fair; if, on the contrary, they leave the centre and adhere to the sides of the cup, forming a ring of bubbles, with a clear space in the middle, there will be rain; if they scatter themselves indifferently on the surface the weather will be variable, while a cluster of bubbles on one side of the cup indicates rain. No one, apparently, has attempted to explain the connection between the behaviour of the bubbles and the atmospheric condition, but it is said that the indications of the coffee-cup barometer generally agree with those of a mercurial barometer placed near by.

THE smell of iodoform can be removed from the hands by washing them in flaxseed meal water.

ACCORDING to a paper published in the last bulletin of the Geological Society of America, bones of men and grinding implements have been found in the auriferous gravel, under lava, at the foot of the Tuolumne Table Mountain, in California. Remains of plants belonging to the Tertiary Age, and the bones of extinct mammalia, such as the rhinoceros of the West and the American mastodon, are also met with in the same strata. Pestles, mortars, and broken spear heads are the most remarkable of the implements discovered. At first sight these relics would seem to imply a vast antiquity, for the old valley gravels have not only been covered with lava, but the lava has been eroded beneath glaciers coming from the Sierra, and new valleys formed. Mr. George F. Becker, however, is of opinion that the great plain of California was once a pleistocene gulf, and that pliocene animals probably survived there long after they had perished elsewhere. This would account for their remains being mingled with those of the human period. Moreover, the glaciation might only be local and long subsequent to the last glacial period.

GUTTA-PERCHA IN CONTACT WITH VITAL TISSUE.—Mr. W. H. Barker writes under the caption in the *Dental Cosmos*. In the conservative practice of his calling the dentist not infrequently faces most perplexing questions, and his ability to properly solve them is the measure of his success.

In the management of pulpless teeth, where there has been extensive removal of tooth-structure by absorption, decay, or mechanical interference, and vital tissue has been laid bare, the question arises.

What substance will these tissues best tolerate, in lieu of what has been removed? In substitution, what would best fulfil the office of that which has been lost?

Manifestly this substance must possess certain qualities in a marked degree. It must be non-irritant, non-destructible, not expand or shrink, and yet possess pliability, and also be practically a non-conductor of thermal changes. These terms, as here used, are relative, not absolute. It is not absolutely necessary that it should be therapeutic, but it must be aseptic in its action. What substance at our command most fully meets these requirements, as demonstrated by actual use, and can be relied on in the present status of our knowledge? Is not gutta-percha the sheet anchor?

Only the affirmative side of the question will be here considered.

Often the apical portion of the roots of such teeth as require the nerve-canals to be filled are more or less absorbed, and the foramina enlarged. In those with multiple roots, from their position in the dental arch, it is often a most difficult matter not to force the material used beyond the apex. With any other substance than gutta-percha, it is a question of doubt as to which is the greater of two evils,—to pass beyond the apex, or stop short of it. Either is faulty, and both are failures, and the first a dire calamity. Should this occur with gutta-percha, it will cause less trouble than with any other substance yet used. In such cases, when there is a doubt give to gutta-percha the benefit of the doubt.

In cases where the drill has passed out at the side of the canal—which every practitioner of experience knows are most difficult to treat—nothing will so well suit the case as gutta-percha; and should it pass through and impinge on the adjacent tissues, they will tolerate nothing so well and so continuously. Coming in contact with the peridental membrane, or the vital bony socket by which it is surrounded, less harm will ensue than would result were an open canal left, to gather foreign substances to decompose and bring about an abscess with a fistulous opening and discharge of pus. It is used, in two forms—a solution in chloroform (chloro-percha), and in bulk. In the latter case it is made plastic by heat. A combination of both is useful in most cases.

It is a well known fact that nature in most cases makes an effort to remove foreign substances that impinge on vital tissues, producing inflammation. In what manner she does this with this substance, may be questioned. Most likely it is by absorption, and it may be termed in a certain sense a physiological process.

Two cases in point. In the mouth of a young man, twenty-two years of age, the superior central was decrowned by a blow at the age of nine. On presenting, the root was found to be badly decayed, being only a shell. At the first sitting I excised a large tumour at the gum-margin, and a second one, also quite large, protruding down in the enlarged root-canal from the apex. The root was undeveloped, and the opening at the apex quite large, the whole root being a shell only. At the second sitting, on removing the canal-dressing, I could see every pulsation, most distinctly at the apex. I closed the foramen with gutta percha, and after three days filled the whole tooth with the same material, and at the end of a week mounted a Logan crown, and dismissed the case. No trouble supervened, no inflammation, no disease or semblance of it. After a lapse of two months the conditions are the same. It is my belief that nothing but gutta-percha would have produced such a result. I would not then, and should not now, attempt such an operation in any other way.

In the second case, a young lady of about the same age presented with a badly abscessed superior central incisor. It was a case where the operator had accidentally cut through the side of the tooth in treating an abscess. I cured the abscess at the apex, and filled the opening at the side—which was quite large—with a gutta-percha point dipped in chloro-percha, allowing it to pass slightly through. One month later I filled the tooth permanently. Before this treatment there had been great pain and swelling, which has entirely disappeared, and no further trouble has ensued. I would not have dared to treat in this summary way with any other substance, and rather than have done so would have extracted the offending organ on sight. In these cases, vital tissue must of necessity be impinged on, or at least must be brought in contact with that which is foreign and non-vital, and yet no trouble follows. Could anything else better subserve the ends to be met, or prove more compatible with the tissues involved ? If so, I should gladly adopt it for use in all cases where vital tissue must be encroached upon in the operation of filling or treating teeth.

A TOOTH LODGED IN THE LEFT LUNG FOR NEARLY THREE MONTHS.—Dr. W. H. Spaulding, writing in the *Ohio State Journal of Dental Science*, narrates the following case. On or about Oct. 6th 1891, Mrs. A—— called on a city dentist to have the upper jaw cleared of teeth. Nitrous oxide was administered. The patient regained consciousness after five teeth had been extracted, but was held by force until the remaining few were drawn. During the operation the patient struggled considerably and breathing was laboured. After the operation she returned home complaining of her heart and a smothered feeling. She was unable to lay on her left side, and about one week after the extraction she commenced coughing and raised large quantities of matter with an occasional admixture of blood with the pus. This continued for about two and a half months, the left lung paining her considerably during this time, when one day she was taken with a violent coughing spell and dislodged an upper wisdom tooth consisting of three-fourths of the crown and one-third of the root of knife edge shape. A few hours subsequently she felt greatly relieved, the soreness in the lung diminished, the coughing ceased, and she rapidly recovered her usual health.

OBITUARY.

Mr. W. H. STONER, after many months of suffering, passed away at his residence, Western Road, Brighton, on March 22nd at the age of 70. He was much respected in the town, where for 44 years he practised his profession. Although he took no prominent part in dental politics, he was always ready in his genial way to talk matters over in private. Much sympathy is expressed at his death. He leaves a widow and family to mourn his loss. His three sons are all members of the profession.

APPOINTMENTS.

Mr. ARNOLD PRAGER, L.D.S.Eng., has b en appointed House Surgeon to the National Dental Hospital, 149, Great Portland Street, W.

Mr. C. C. ROBBINS, L.D.S.Eng. and Mr. H. LLOYD WILLIAMS, M.R.C.S., L.D.S.Eng., to be Assistant Dental Surgeons to the Dental Hospital of London.

The management of a dental practice is, says the Editor of *The Dental Review*, very troublesome to many, but some dentists are more troubled about how to get patients—trusting to luck for their management a little later. We think that dentists spend too many hours at the chair from day to day to accomplish the most good either for themselves or their patients. Five hours per day for operating and one hour for consultation will suffice for a comfortable income, even at moderate fees, leaving some time for study and experiment during daylight.

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Original Communications.

ON NON-COHESIVE GOLD AND TIN FILLINGS.

By H. BALDWIN, M.R.C.S., L.D.S.

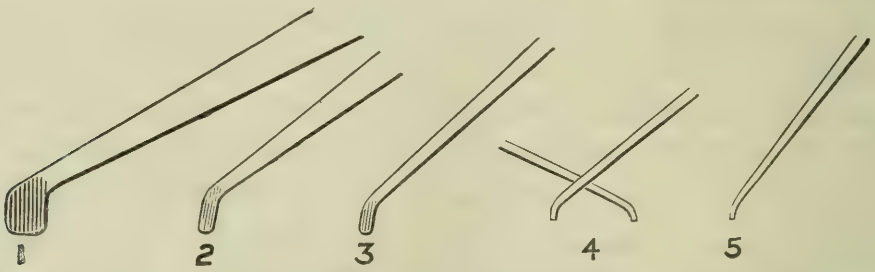
WHILE it is essential for a first-class operator to be expert in the use of cohesive gold capable of building up rapidly and solidly well anchored contour fillings, especially in front teeth and upper bicuspids, it is also essential for him, in order to give his patients the greatest amount of value with the least expenditure of time and discomfort, to be expert in the use of non-cohesive gold. Many operators make the mistake of assuming it to be impossible for any man to thoroughly master both kinds of foil, and others who are expert in the use of one kind, fall into the error of ridiculing the other. This is especially true of some cohesive workers who make a boast of never having inserted a non-cohesive filling in their lives.

The immense value and all-round capabilities of cohesive gold for building up contours, and doing complicated fillings at or near the front of the mouth is too self-evident to need mentioning, but what is very desirable is that operators should recognise that in certain very numerous cases cohesive gold can be set aside in favour of non-cohesive with a great saving of time, trouble and tooth-substance.

A vast number of modern non-cohesive fillings are soft, friable, and generally unsatisfactory, usually because they have been badly done and the gold has never been condensed. Such fillings as these are answerable for the contempt into which the material has fallen in the eyes of some practitioners. They see what failures these fillings are, and recognise them as non-cohesive. The excellently condensed ones they do not recognise, but set them down as cohesive work. From time to time I see gold fillings, sometimes interstitial ones, in front teeth which are perfectly dense and good and have been in their places 50 years. All gold work was non-cohesive 50 years ago. If the dentists of a former age could produce these life-long fillings with non-cohesive gold, so can we, if we learn the art and take the trouble. But unless we can make any given filling as good, and as good looking too, with non-cohesive as with cohesive gold, we certainly ought not to use the non-cohesive,—only where the non-cohesive is inferior in no respect but absolutely superior in the saving of time and discomfort, &c.

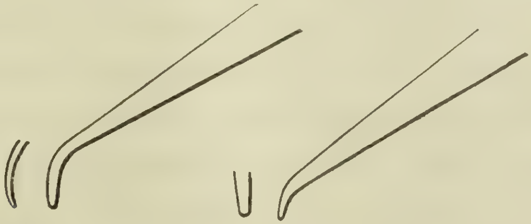
I do not advocate doing great things with non-cohesive gold. Large open cavities even in crowns I prefer to do with cohesive, or with amalgam if far back in the mouth; though in these cases most excellent fillings can be done in the manner practised by Mr. Amos Kirby, by using very dense cylinders or masses rolled or wrapped up in the fingers and malleting them with a very strong blow up against the walls of the cavity. In this way the filling can be made as dense as a cast ingot of gold, handsome and absolutely durable. But where non-cohesive gold is pre-eminently indicated is in crown cavities of moderate dimensions, and almost all small cavities with well preserved walls all round. In these cases it is often a great boon to be able conscientiously to dispense with the rubber dam, and here this can perfectly well be done. Although it is always convenient to have every filling absolutely dry from beginning to end, it is not essential in non-cohesive work, and where necessary a substantial non-cohesive filling can be done under water.

In the small cavities such have been mentioned, and the narrow though long cavities such as fissures make when thoroughly cut out. I differ from most operators in hardly ever using a foot plugger for non-cohesive, but use instead pluggers which are all compressed laterally and condense by their sides and point. For the larger class of work the sides of the pluggers are slightly grooved lengthways, and do their condensing by being rocked strongly from side to side. This rocking is a far more powerful means of condensation than any mere forward pressure can exert, as with a foot-plugger. The size of the plugger should vary directly with the size of the cavity; the lateral faces of the plugger should equal the width of the



pieces of gold inserted. As regards the form into which the gold is wrapped, it is variable and immaterial, sometimes as tape, sometimes as rope, sometimes as cylinders, and the gold is nearly always picked up and inserted into the cavity by means of the plugger itself, not conveying forceps. One side or other of the plugger is used for picking up the gold, according as the gold is to be placed against the right or left side of the cavity, the side alternately varying as the work progresses.

For quite small cavities, especially interstitial cavities in front teeth, the pluggers are quite smooth, slightly curved laterally, and so are made in pairs, right and left. Figs. 4 and 5. These small fine smooth pluggers, by a sort of "tour de maître," tuck the gold (tape) into small and deep interstitial cavities in front teeth and make perfectly dense and serviceable fillings, where cohesive gold would be quite impossible on account of want of room. In these cases the point is used a good deal for compressing each piece of the gold after it has been carried into place on the side of the instrument. In commencing one of these interstitial fillings, it is best to first cover the cervical wall, then the lingual, then the labial, and finally the wall nearest the tip or cutting edge. Each piece of gold is carried into place by a twisting, tucking, motion, the "heel" of the instrument being held fairly steady near the margin of the cavity, while the "toe" is swept round into place to the bottom or floor of the cavity. This action may well be called a "tour de maître," as it corresponds fairly to that of the urethral operator. By a similar twisting motion the excess of gold is condensed on the surface by the point or toe of the instrument. If the gold, when all packed, is in contact with the next tooth, it should be sawn smooth with a thin flat fret-saw in a Kaeber saw-frame, and then burnished strongly with curved, flattened burnishers made in pairs, right and left, (Fig. 6) and with a short flattened burnisher with the point bent up rather abruptly, (Fig. 7.) Burnisher No. 7 is a powerful compressor as it is worked by a lever action, the bearing being taken from the next



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tooth. The filling is finally finished by passing between the teet the finest disc obtainable of cuttle fish bone paper.

So much for pure non-cohesive gold. Now comes the question of tin. There is no doubt that fillings composed of tin and gold undergo a remarkable and most salutary change during the first twelve months of their lifetime ; a change which is induced by the mutual contact of the two metals, and is due probably to the formation of stannic oxide or sulphide under the influence of electric action. Mr. Tomes first drew my attention to the peculiar change nine years ago. I do not know who was the first to notice it, but it has been the continuous custom in our practice to use the combination in suitable cases, with the express object of securing the transformation for at least that space of time.* The change results in the filling becoming hard as amalgam and cohesive throughout. I have noticed that the quantity of the gold must exceed that of the tin ; at all events, the tin must not be much in excess, otherwise the hardening does not take place; on the contrary, I have noticed a washing away of the tin in such cases, which could only be explained on the theory that the tin had become transformed in part into a soluble salt and had consequently partly wasted away. The usual way to prepare the tin and gold is to wrap up one sheet of No. 4 tin (White's extra tough) between two sheets of No. 5 non-cohesive gold (preferably Abbey's). Even when first used this combination possesses such binding qualities as to render it extremely easy and rapid to work, and after the lapse of six months or more acquires such hardness and cohesion as to make it advisable to use it, wherever possible, instead of pure non-cohesive gold, its appearance being the only respect in which it is not in all cases superior to pure non-cohesive gold as a filling material.

It has the faculty of holding in from the first much better than pure gold. In a few cases of deep molar fissures in difficult juvenile patients I have filled the fissures with tin and gold without any excavation by means of the edge of a very fine flattened plugger, and in every case of this sort the fillings, though done several years ago, are perfect yet. The tin and gold should be packed in the same way as pure non-cohesive gold, except that it is not necessary to take anything like so much care. It is essential, however, to condense it thoroughly ; but this is easily done. It follows, from what has been said, that the mixture of tin and gold is always better as regards durability than pure non-cohesive gold at the cervical edge of combination non-cohesive, and cohesive work. In all cases of deep interstitial bicuspid cavities, tin and gold is absolutely the best material that can be used at the cervical edge, but, for appearance sake, it is best to place pure non-cohesive gold against the labial wall in this situation whenever the filling will be visible between the teeth. In interstitial cavities in front teeth, when filled non-cohesively, it is an advantage to work in a little tin and gold into the back and unseen part of the filling. In fact, every non-cohesive filling is rendered more certain by the introduction of a little tin and gold.

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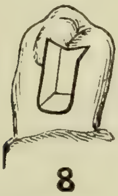
* Mr. Tomes tells me it dates from at least 20 years ago.

Finally tin and gold is absolutely satisfactory *as a contour filling* in certain composite interstitial cavities in bicuspids and molars ; by composite I mean extending into both interstitial and masticating surfaces. The only requirements of the cavity are that the labial and lingual walls shall be strong and well preserved, and the cavity shall extend at least as deeply into the substance of the tooth as it is broad. In these cases I should hold it very bad practice to fill entirely with non-cohesive gold as some attempt to do, but with tin and gold, the case is quite different, as the mixture binds together very toughly from the first and finally becomes agglomerated into a hard and solid mass. Of course the usual precautions must be taken against the transmission of thermal changes. The method of packing these cases is as follows : Fig. 8 represents a suitable cavity in a lower bicuspid.



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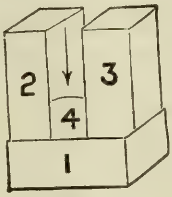

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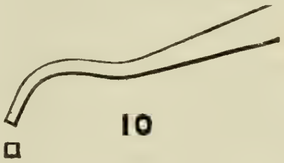

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1st. One or more masses are packed down thoroughly against the cervical wall by an instrument shown by Fig. 10. (The filling partly completed is represented on an enlarged scale at Fig. 9.)

2nd. A flat mass is placed upright against either the labial or lingual wall and compressed thoroughly against it with the side of one of the larger flat pluggers and then with one of the smaller ones.

3rd. The opposite wall is treated in the same way, taking always care to work the tin and gold against and, if possible, round the edges of the cavity, and to condense thoroughly.

4th. A mass is driven down towards the cervical wall between the lateral masses and thoroughly condensed.

5th. The remainder of the cavity is filled by flat masses standing upright and compressed laterally towards the walls like Nos. 2 and 3. All the lateral masses reach up as high as, and rather higher than, the orifice of the cavity.

The excess is then condensed down with suitable instruments like Fig. 10, and then the filling is burnished hard against all the edges.

If the filling has been built up against the next tooth, a Kaeber saw should be passed through to the gum, to be followed by the curved flattened burnishers. The portion forming the masticating surface should be burred down with an ordinary finishing bur, and burnished strongly down with a ball-ended burnisher.

For finishing the cervical edge the double-ended knife-like instrument made for me by Mr. D. R. Collins and Messrs. Ash, will be found specially useful.

There is no objection to the use of a matrix in these cases, indeed, a tight well-filling matrix is usually an advantage. The kind I prefer being the Ladmore Brunton band matrix held tight by the small screw-clamp of the original design, and not the large straggling screw-clamps which were intended to be an improvement. One word of caution about the use of a matrix is that when packing against the cervical wall, the filling material should be packed first against the cervical edge, *i.e.*, against the matrix and into the retiring angles, otherwise these confined situations may not get thoroughly filled.

THE PREPARATION OF CAVITIES.*

By EDWARD MOSELY.

MR. PRESIDENT AND GENTLEMEN—

I am aware that there is nothing original in any of the various methods I shall discuss in this paper which I have the honour to read before you to-night ; but I have endeavoured to set down the manner of preparing the varieties of cavities we encounter in our daily work, and the principle on which such preparation is based.

This subject is so wide in its range, and, necessitating as it does the performance of so many and varied operations, that it may best be considered by dividing it into four heads :

I. The treatment of pathological conditions when present.
II. That of gaining free access to the cavity.

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* Read before the Students' Society, London Dental Hospital.

III. The removal of diseased tissue.

IV. Shaping the cavity.

I would impress upon you the necessity of proceeding methodically. A correct diagnosis must first be formed, for any treatment can only be successful when based upon a rational and comprehensive view of the conditions to be dealt with.

I do not propose to speak at any length of the treatment of diseased pulps, or the remains of such, merely remarking that cavities should be cleared of carious tissue before any root treatment is attempted.

You are all conversant with the treatment indicated when the pulp is exposed. Izaak Walton said of the frog used as bait when fishing, that you must "handle it as if you loved it." In like manner, gentlemen, must you treat your living tooth.

I will now pass to my second head.

Gaining Free Access to the Cavities.

There are various means at our command to obtain this. Where time is no object, or great space is required, tape, cotton wool, compressed wood, which act by swelling due to absorption of moisture, or india-rubber, acting by its inherent elasticity, may be employed.

Tape is the most comfortable to the patient, but is slow in its action, and requires constant attention, the thickness having to be increased at intervals till sufficient space has been gained. Cotton wool is used by firmly packing into the cavity; by its swelling the teeth are forced apart—this should not be used where an exposure of the pulp is suspected.

Rubber, which is used in strips of various thickness, is stretched to enable it to be drawn between the teeth. Contracting, it tends to resume its original thickness, and so forces them apart. Care must be taken that the rubber does not exert pressure on the gum—this can only occur between the back teeth, and can be avoided by allowing the edge of the strip to extend beyond the masticating surface. While a very useful and powerful separating agent, rubber should be used with discretion; the space originally between the teeth, their firmness of implantation, the possibilities of motion, and the space required must be considered, and the thickness used must depend on these conditions. The force exerted by the contracting rubber is continuous and great, sometimes causing severe pain, and it is good practice to commence with a thin strip, and when this has exhausted its power, to rest the teeth by substituting tape for a day, and then use a thicker strip or one of the mechanical separators. Immediate separation allows the alternative use of wooden wedges, or various forms of mechanical separators.

Separation by wooden wedges is useful between the front teeth where the space required is not great, where the cavity does not extend so close to the gum as to be encroached upon by the wedge, and where, owing to the shape of the teeth, it is inconvenient or impossible to use a mechanical separator. The *modus operandi* recommended in the text books is to use two wedges of hard wood, the first gradually tapering, to be gently driven with a mallet, between the approximal surfaces at the cutting edges, the other, which is more obtuse, is slipped between their necks, securing the space thus gained, and is left *in situ* during the operation. The ends of this are cut short, the first being removed.

I do not advocate this method, it being easy to apply too much force and set up acute periostitis, or even worse evils, but I think that a thin wedge, forced with the fingers between the teeth from within, outwards is a preferable manner of applying this principle. The wedge may also serve the double purpose of holding up the rubber and forcing back intruding gum.

The mechanical separators generally used are the Universal and the Perry—the former, I am proud to say, designed by a gentleman formerly a student at this Hospital, and now connected with it in another capacity. It is an extremely handy little instrument, being less hindrance to the operator, and allowing better access to the cavity than the latter. I find, however, patients prefer the Perry, which steadies the teeth, and, moreover, the operator is liable to inadvertently press on the far end of the Universal, thus exerting undue leverage on the teeth, an act which is not appreciated by the patient.

In immediate separation it is advisable to lessen the pain by applying cocaine to the gum over the roots of the teeth, which may be done either by allowing one-eighth grain tabloid to dissolve on the gum, or by rubbing on a small quantity of the hydrochlorate crystals. This may not be quite so scientific as using a measured quantity, but you arrive at your destination notwithstanding.

Local application of tincture of cannabis indica may be used for the same purpose, its effect being enhanced by the addition of chloroform, ten minims to the ounce of tincture, painted on the dried gum.

If the teeth are loose or tender, they must be steadied during the operation by wedges, or a splint of shellac or composition. The gum should be painted after the operation with equal parts of Fleming's tincture of aconite and tincture of iodine (double strength) or capsicum plaster may be applied. Still another method of gaining space where there are many cavities requiring attention, is that advised by Kingsley, of inserting an expansion plate for a short period anterior to the operations. Gutta-percha can also be packed into a cavity and left high to the bite ; this has the effect of separating the teeth with a minimum of discomfort.

Where the gum has, by hypertrophy, encroached upon the margins extended into the cavity, it must either be forced away by packing into the cavity a plug of gutta-percha, or cotton wool saturated with solution of benzoin or mastic, or be burnt away with a caustic, such as ethylate of sodium or potash and chalk, or removed with a lancet, cocaine having been previously applied.

Breaking down the enamel, or opening up the cavity, is best done with chisels. These are used to attack overhanging edges of enamel, which, owing to its fibrous structure, can be rapidly broken down. Enamel should be cut back freely where unsupported by dentine, to allow direct access to all parts of the cavity. Overhanging margins must be pared back, because it is not possible to solidly fill beneath them. Weak walls, and those likely to break down under the strain of filling or the force of subsequent mastication must also be reduced until sufficiently strong ; should a wall break down after the operation it may necessitate the tooth being refilled under conditions less favourable than at first. Emery and sand-paper discs can sometimes be conveniently used to cut back enamel edges in approximal cavities in back teeth. Frequently where these cavities have enlarged, it is necessary to open up through the masticating surface, the enamel being thickest and strongest in this region, and, forming an arch over the cavity, offers great resistance to chisels ; but, after cutting through the arch with a fissure-bur, the sides can be easily pared down. By grinding an old bur into a five-sided broach, an instrument can be made which is unequalled for this purpose. In front teeth it is not so necessary to cut away unsupported enamel, owing to their position, the certainty with which a solid filling can be introduced from behind, and the slighter strain upon them in mastication ; it is justifiable and advisable to allow the labial wall, if sound, to remain, as it lessens the show of gold; but, on the other hand, in interstitial cavities nearer the lingual aspect of the same teeth, it is advisable to remove sufficient of the labial wall to allow the light to be fully reflected from the gold, otherwise the fillings may appear black in certain positions, owing to the rays of light being dispersed instead of reflected from the polished surface of the gold.

Passing to the removal of decay, which must be complete, softened tissue must be cut away, however slightly it may appear involved. The dentinal tubules become infiltrated with bacteria, which may be seen under the microscope extending far beyond the region of apparent caries. The only exception is when the entire removal of carious dentine would lead to exposure of the pulp. Softened tissue allowed to remain must be clearly disconnected from the margins of the cavity and sterilised. *This is an important point*, for if it is almost impossible to make a water-tight filling, much more so must it be to make one air-tight; moreover, both aërobic and anaërobic bacteria are concerned in caries, and no precaution should be neglected to prevent the recurrence of decay. The sterilisation must be thorough; merely wiping the cavity with germicides is useless; it must be flooded with dilute carbolic acid, or bichloride of mercury (5 %), which should be allowed to remain four or five minutes, then dried with cotton wool and dessicated by hot air. For the removal of carious dentine, excavators with different sized spoons are the best, as their liability to slip into the pulp-chamber is less than with other shapes, and in deep cavities they cut instead of merely scraping. While on the subject of excavators, I may say that it is time-saving to have all right and left instruments double-ended; the direction of the strokes should be from the pulp towards the periphery, and this necessitates frequent change of instrument; and with double-ended instruments there is not the annoyance of invariably picking up the wrong-sided instrument, and then hunting through all the rest for its fellow.

Sensitive dentine is the chief difficulty in clearing a cavity. It appears to be greatly a matter of idiosyncracy, some patients suffering more than others; and it can be generally overcome by using *thoroughly sharp* instruments—a point which I cannot emphasise too strongly; and I think using them slightly warm will be found of great benefit. Dehydration by alcohol and hot air is usually very successful, but may have to be repeated as the effect passes away. Certain drugs are also of assistance;

strong carbolic acid and chloride of zinc may be used in shallow cavities, and nitrate of silver is very valuable ; but, owing to the discoloration it causes, is only indicated for back teeth. These drugs act by their caustic action on the dentinal fibrils, and should not be used in deep cavities where their action is likely to extend to the pulp. Even in shallow cavities they cause a certain amount of pain, which, though sharp, soon passes away. Arsenious acid has also been used as an obtundent, but I do not think its use is ever justified, no matter how shallow the cavity or how short a period it be allowed to remain. The insertion of temporary osteo fillings is a valuable method of allaying sensibility. Zinc oxychloride is the best of the plastics for this purpose. It should be left from two to three months ; it causes a slight calcification of the dentinal fibres by the irritation set up by the excess of uncombined acid present. The junction of the enamel with the dentine, and the layer of partially disorganised dentine sometimes present are usually the seats of exalted sensibility, and after passing through these the subjacent tissue is far less sensitive.

After the removal of softened tissue, the cavity is but seldom suited to the best introduction and retention of a filling. This stage, that of shaping the cavity, may be discussed from two points of view.

1st.—The conditions theoretically essential for the best introduction and retention of the filling.

2nd.—Modifications of the above involved by

- (*a*) The amount of tissue lost by caries.
- (*b*) Extension of cavity for prevention of recurrence of decay. This includes finishing the edges.
- (*c*) The filling material used.

It is laid down by Tomes that "a cylindrical hole may be regarded as presenting the most advantageous form for the reception of a plug, and the nearer the approximation the greater will be the facility with which the operation of plugging is performed, and the greater also will be the chance of producing a durable plug."

I have the audacity to differ slightly in my opinion from so great an authority, and consider that, theoretically, a cavity with slightly converging walls presents a more suitable shape for the introduction of the filling, though not for its retention ; and in support would urge that in a cavity of this shape the gold can be more thoroughly consolidated, and the convergence of the sides counteracts the tendency of the gold to curl away from the walls, and that force upon the filling only drives it into closer contact with the cavity. This shape, however, is the one least suited to the retention of a filling, therefore it must be modified so as to obtain *sufficient retention* with *as much of the original advantage of introduction* as can be kept.

This will be done by cutting a shallow groove round the sides at right angles to their planes, and as both the filling and the tooth matrix are (*or should be*) of firm resistant materials, this should prove sufficient to effectually answer the purpose.

This, then, is my typical cavity—walls converging inwards, floor slightly hollowed, no sharp angles of junction between sides and floor, and the filling to be retained by transverse grooves in the walls.

Passing to my second point. The modifications of the theoretical best shape involved by practical considerations.

The shapes presented by carious cavities may be readily divided into two—those with four walls and those with three or less. Four-walled cavities may be either shallow saucers, where the disease has penetrated to a slight extent, or their antitheses, inverted cone shaped holes with their bases towards the pulp, and more or less covered in by overhanging enamel. Neither of these shapes is suitable—in the first, a filling would be difficult to introduce and impossible to retain ; and a solid filling could not be inserted in the second.

Between the two lies safety.

The first is the nearer approach to the typical cavity, only requiring the retaining groove mentioned before. This need not extend all round the cavity, short grooves on two opposite sides being in most cases sufficient. The enamel margin also requires finishing, a point I shall mention further on.

In the latter variety the overhanging enamel will be cut away in the process of gaining access. The sides should be left but slightly diverging inwards, or, if possible, parallel ; the needless sacrifice of much sound tissue would be required to attain the typical cavity. No further provision for retention need be made in this class of cavity.

The second class, cavities with three or less walls, are compound cavities caused by loss of structure, involving more than one surface of a tooth. It includes approximal cavities in bicuspids and molars and approximal cavities in front teeth, involving also the labial or lingual surfaces, and sometimes both.

In this class the strain of mastication tends to force the filling out of the cavity instead of into it, and there being but three walls there is the additional tendency for the filling to escape in the direction of the missing wall. Therefore in shaping cavities of this class, *convenience of introduction must yield in favour of efficiency of retention.*

In approximal cavities in bicuspids and molars the best form is a double wedge, the base of one being at the cervical margin, and of the other towards the central axis of the tooth. This ensures retention of the filling and prevents its escape towards the masticating surface or away from the tooth.

In front teeth there is not sufficient tissue to enable this double wedge shape to be utilised, but the same end is attained by slightly sloping the floor inwards, and by drilling an opposing point to this base at the apex of the triangle this class of cavity usually presents.

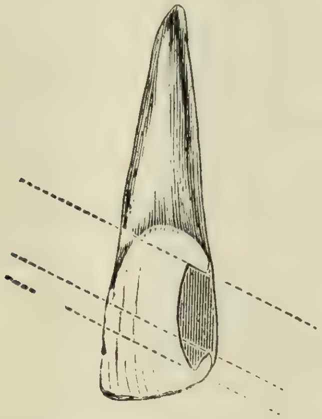

Diagram to illustrate the inward slope of the floor, and the position of opposing point ; both of which are purposely exaggerated.

Grooves may also be cut in the labial and lingual wall if sufficiently strong. It is not necessary though it is preferable that these grooves should extend the entire length of the walls, nor that they should be deep, but they must be well defined.

The next consideration is the modifications necessitated by the nature of the material used for the filling.

The zinc plastics are unfavourably acted on by the fluids of the mouth. Gutta-percha cannot resist attrition, therefore these are best protected by allowing as far as possible enamel to remain over the mouth of the cavity and so protect them.

I feel a certain amount of trepidation in venturing an opinion on preparing cavities to be filled with amalgam. The apostle of the new departure says in his able monograph on amalgam :—

"All this is lost sight of—the retaining edges, the deep curves, the holding power of properly prepared periphery, make the mind of the amalgam worker easy on the score of plug retention, and he truly bestows as much attention, care and thought upon not removing decay, as the gold worker does on its removal." I would direct your attention, Gentlemen, to the concluding phrase of this extract —to carry this argument to its logical conclusion. "Why then should the amalgam worker trouble to remove decay at all? Why prepare the cavity? Why not fill over the decay and trust to the preservative and recalcifying power of amalgam"—as Euclid says "Which is absurd." With all due deference to Mr. Flagg, and with the exception of not exposing the pulp, I take it that there can be no advantage in leaving softened tissue in cavities to be filled with amalgam, and trusting to the reputed therapeutical effect of the filling to prevent the inevitable progress of decay.

While allowing that in cavities for amalgam it is not so *absolutely* essential to remove all decay as in those for gold, still, to obtain the advantage of the holding power of properly prepared periphery before quoted (which I understand to be packing the amalgam beneath overhanging enamel) it is necessary to remove softened tissue from beneath it, which I think is impossible to thoroughly do.

All sharp angles and undercuts being carefully avoided, cavities for amalgam should be left ball shaped to counteract as far as possible the property of this material to assume the spheroidal shape when hardening.

It is not advisable to bevel the enamel margins of cavities for amalgam. This brittleness of this material and enamel being about equal, a feather edge of amalgam is as likely to give way as an unbevelled enamel margin.

Cavities for gold will be shaped on the principles laid down when considering the best shape for the best introduction and retention of the filling.

For cohesive gold I will add that in interstitial cavities in the back teeth especially in bicuspids, that unless the fissure between the cusps is very feebly marked, it is as well to cut it out, thus obtaining additional anchorage for the filling, and removing a very possible cause of subsequent failure.

Cavities to be filled with non-cohesive gold or tin, will almost invariably have four walls. These should have the floors flat and the sides parallel. In levelling the floors of deep cavities, I think filling up depressions with a zinc plastic is preferable to cutting away eminences of sound dentine.

As we have in this material, one, which in teeth of good structure and with proper manipulation is practically a permanent filling, the greatest care should be devoted to any point which will prolong the durability of our work. By the extension of cavities, under which head I include bevelling the enamel margin, we have the means of removing a great factor in the recurrence of decay.

There is considerable difficulty sometimes in preventing this recurrence, the cervical margin of approximal cavities in the back teeth being its common seat. It is due to a variety of causes, partly the shape of these teeth which present large surfaces in contact, partly to their use in mastication by which food is crowded in between them and forced down against the gum, where if not removed, it decomposes with the usual results, and perhaps another cause is defective manipulation by the operator.

These cavities, then, should be shaped that only the filling comes in contact with the adjacent tooth, or filling with filling. To this end, having first obtained sufficient separation between the teeth, the cavity should be enlarged towards the cervical margin. If the cavity nearly reach the cervix, it is best to remove the small portion of enamel remaining, as it is likely to flake off, having an extremely vulnerable point. I think in enlarging cavities for this purpose, it is best to err on the right side by cutting away freely if in doubt. When the filling has been inserted and the teeth have returned to their place, they should not be in contact by enamel at any point, and the natural triangular interspace should exist at their necks.

The enamel margin should be finished by being bevelled or chamfered, so that it forms a definite obtuse angle with the surface of the enamel. This removes any half fibres, or whole ones unsupported by dentine ; also it enables the gold to be forced into more perfect apposition with the edge. It is hardly necessary to remind you that the line of cleavage of enamel is supposed to run through the axes of the prisms, and that at the margin of a cavity there will be left half fibres, and probably some whole ones, unsupported by dentine. The lack of organic material renders enamel specially unyielding and unsuitable to resist sudden shocks, unless supported by a more elastic substance. Half fibres, and those supported only by filling material, are likely to split off during or after the insertion of the filling, leaving a crevice for the lodgment of food, débris, etc.

I have already contended that the most perfect consolidation of gold can be obtained in a cup-shaped cavity ; but as this shape is the one least suited for the retention of a filling, it is impossible to utilise it for the body of the filling ; but bevelling the margins has practically the same effect as if the sides of the cavity, from the floor to the margins, were continuous divergent straight lines, and thus enables the mouth of the cavity to be filled in the most favourable manner. The bevelled edges should present definite flat surfaces at obtuse angles to the surface of the enamel. They should be planed with sharp chisels, polishing or rounding the edge causes the filling to terminate in a thin, hollowed feather-edge, which is unreliable. By leaving a plain surface the edge results in a strong, angular mass of gold. It is difficult sometimes to properly bevel the cervical margins. I have here an instrument designed by Mr. May for this purpose, which is very effective. It is an enamel chisel bent at an angle of about 45°, and the cutting edge at right angles to the axis of the handle, and it cuts by either pushing or pulling, and leaves the margins smooth.

The preparation of cavities for gold would not be complete without some means of retaining the filling, or at least that portion of it first inserted, for our fillings are to be retained by the general shape of the cavities.

Retaining points, or starting points as they are better called, are sometimes necessary ; but, as they are painful to the patient, injurious to the tooth, and trying to the operator's patience, it is as well to do without them if possible. The alternative methods hardly come within the scope of this paper ; but I may mention—commencing the filling with non-cohesive gold or tin, steadying the first portions of the filling with an instrument held in the left hand until sufficient has been packed to remain firmly, screw-posts fixed into the dentine or root canals, and lastly setting a well-condensed cylinder with a zinc plastic.

This paper would not be complete without a reference to matrices. I believe these are of great use for amalgam and non-cohesive gold or tin ; but with cohesive gold I have always found—

and in this I am confirmed by others—great difficulty in making perfect edges, *not so much at the cervical as at the buccal and palatal margins*. The Jack and Herbst matrices are convenient patterns, and, as a suggestion, I may say I use the ordinary paper fasteners for this purpose. They are thin, soft, and inexpensive, and, if required, can be contoured with pliers like band crowns. The manner of applying them is simple. The edge is hollowed to fit the gum. The fastener is slipped between the teeth and burnished close to the margins of the cavity. A wedge dipped in solution of gum-benzoin or mastic is then forced between the two leaves to keep it in position.

For isolated teeth a belt of platinum foil or thin German silver may be bent up, and the ends soft-soldered together, as recommended by Tomes. These and the strap matrices are very suitable for large cavities to be filled with amalgam.

There still remains to be considered that small class of cavities for glass and porcelain inlays. For these it is necessary that the walls be perpendicular to the floor, and no undercuts must be left. In some cases it is of advantage to fill up undercuts temporarily with osteo-plastic, which can be removed when the fitting of the inlay is completed.

In conclusion, gentlemen, I thank you for your kind attention to this somewhat lengthy paper, and feel convinced that a practical subject like this deserves—and will obtain from you—an instructive and interesting discussion.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The Ordinary Monthly Meeting of the above Society was held on Monday the 3rd inst., at 8 p.m., at 40, Leicester Square, the President Mr. J. Howard Mummery, M.R.C.S., L.D.S.Eng., in the chair, supported by a good attendance of members and visitors.

Mr. Harris and Mr. Balding, Junr., signed the obligation book and were admitted members of the Society.

Messrs. Phillip B. Read, L.D.S.Eng., of Sidney, David Thompson, L.D.S.Edin., Harry Davis, L.D.S.Eng., were balloted for and duly elected.

The Curator (Mr. Storer Bennett) reported the receipt of two first lower molars with three fangs each, presented by Mr. Oswald Fergus of Glasgow, and proceeded to exhibit the skull of a Malayan bear showing extensive alveolar abscesses, two in the upper and one in the lower jaw. The root of the upper canine had been fractured across at the neck and the abscess caused extensive absorption of the walls of the nares. On the opposite side of the jaw the canine tooth had an abscess connected with it which had burst into the mouth. In the lower jaw the canines were also extensively abscessed. The bear had been kept in captivity, and Mr. Bennett thought that the reason why so many wild animals that have been caged have multiple abscesses is that the irritation caused by the trouble with the first tooth is so great that it causes them to gnash their teeth against the bars of their cage, and thus much more extensive damage is subsequently done. In this instance Mr. Bennett was of opinion that the lower first canine was the first affected.

Mr. S. A. Coxon narrated a case of "Cystic Sarcoma of the Superior Maxilla."

The patient came under Mr. Coxon's notice early in November, 1890. The tumour, which she said had been forming for three years, was the size of a large walnut, elastic to the touch and of a bluish red colour. Being enceinte she was anxious to avoid an operation, but her mouth gave her considerable uneasiness and pain. Believing at the time that the growth was not malignant it was opened a week later, Dr. Langton giving chloroform. Considerable hæmorrhage followed the operation, and a small amount of glairy fluid escaped. The cavity was plugged with carbolised tow which was changed every second day and the cavity thoroughly syringed out. In December the true nature of the tumour became apparent, and the patient was sent to St. Thomas's Hospital on the 17th, when Sir William MacCormac removed what proved to be a perfectly encapsuled tumour. The patient was very little disfigured by the operation. Mr. Coxon afterwards made a denture in such a manner that while it fitted round the edges and held out the lips, it did not bear upon that portion from which the tumour had been removed. A piece of pure tin was taken about one-sixteenth of an inch thick, struck down to the model of the mouth, over the portion which it was desired the vulcanite should not touch. It was packed in the ordinary manner and when the case is vulcanised, the tin was peeled away leaving the vulcanite with a hard polished surface but not in absolute contact with the part.

Mr. Coxon urged the importance of impressing upon patients the necessity of operations in such cases, it was their duty to see that patients had medical advice, for early attention had saved numbers of lives.

Sir William MacCormac did not know that he had much to add to the description of the case. The patient, when she came under his notice, evidently had a central tumour affecting the upper jaw, presenting itself on the outer side of the alveolus, and it was thought to be probably of a myeloid nature. After examining he decided on removal. This was readily done by clearing away the tissues all round and by making an incision near the angle of the mouth. The tumour was very completely encapsuled and it came away without difficulty. In his experience myeloid tumours were much more rare in the upper than in the lower jaw, and the one in question he thought would show itself the least malignant of the type of sarcomatous tumours. Mr Coxon had mentioned that the operation had resulted in very little deformity, Sir William thought that in this case there was no need for it; the angle could be made either shorter or longer in the cheek and in that way almost any growth could be removed from either upper or lower jaw, there need not be any unsightly scar left. It was almost a matter of detail, but it was of great importance to bring the edges of the mucous membrane together very accurately, for primary union then took place much more rapidly. Partly on this account, and partly owing to the very admirable way in which Mr. Coxon had fitted the artificial piece, he thought that when they saw the patient they would say that very little deformity was apparent.

Mr. Frederic Eve suggested that for the sake of clearness Mr. Coxon might slightly modify the title of his communication; the term "systic sarcoma" was originally used for epithelial tumours—multilocular cysts originating in the epithelium. Mr. Coxon's case was really one of "Central Myeloid Sarcoma of the Jaw," and he would suggest it should be so described.

Mr. Stanley Boyd asked Sir William MacCormac if an incision into the nostril would not have given better access than the one made.

Sir Wm. MacCormac thought the incision made was the better one, though the one suggested would have been necessary had the tumour been more extensive. By his incision he had limited the scar more than would otherwise have been possible.

Mr. Coxon in reply said he believed that in the first instance the tumour was the result of an alveolar abscess; it came from a carious tooth, and undoubtedly after that there was a cyst, then after that it developed tissue which became malignant and myeloid.

Mr. Stanley Boyd then read a paper entitled "Suggestions of a plan for preventing lateral displacement of the chin after removal of a portion of the lower jaw."

A case had been recently placed under his care by his colleague, Mr. J. F. Colyer, which had suggested to him that it might be possible in certain cases of removal of a part of the lower jaw, to prevent some of the distressing deformity which results from that operation, especially deviation of the chin from the mid-line. They would all be aware that asepsis is of the first importance in obtaining encapsulation of a foreign body, and that it is practically impossible to obtain this when a wound communicates with the mouth, and even when obtained, absorption of the graft and of any new bone which may at first have developed from it, has been the usual result. In the case of defects of the jaw it would only be in rarest cases that they might hope to fulfil the requirements for success with living bone grafts; and this no doubt has given rise to the feeling that it is hopeless to try and prevent displacement of the chin after resection of a portion of the jaw. Dentures of all kinds had of course been tried, but they got but a superficial and often a very poor hold, so that they failed to counteract the force with which the shrinking granulation tissue drags together the sawn ends of the bone. To succeed in preventing this contraction, dentures must be assisted by some kind of spanner between the bone ends. The question to be decided was whether a bar of some unabsorbable material could be got to heal in? At first Mr. Boyd did not venture to try for this, but started with the idea that he should have ultimately to remove the spanner, but accident showed that this might not be necessary.

The patient, aged 20, had one of her front teeth in the left side of the lower jaw removed in October, 1889, to make room for another tooth. About two months later she noticed a small tumour in the inside of the gum, near the seat of the extraction, and in ten months it gradually reached the size of a large Spanish nut. She was then sent to him by Mr. Colyer, but was only in Charing Cross Hospital from Saturday to Monday and no notes were taken; Mr. Boyd, however, remembered that a ridge could be felt in the jaw, running down from the base of the growth near the line of the fang of the first bicuspid. A tooth was drawn on each side of the mass, it was then cut away freely with forceps and a gorge was used along the ridge above mentioned. The growth being apparently of myeloid nature it was hoped that the treatment would prevent recurrence, but this was not the case, as it re-appeared in six months, there was then a tumour on the left side of the lower jaw involving it from near the mid-line to the first molar tooth and infiltrating the substance of the bone somewhat deeply. The malignancy of the growth being now obvious free operation was necessary, but Mr. Boyd was anxious to avoid breaking the continuity of the arch of the jaw, if possible. A vertical incision was therefore made in the mid-line of the chin downwards from the groove between the lower lip and the mental prominence and then outwards along the lower border of the jaw to the masseter, the jaw was sawn nearly through, just to the left of the mid-line, and through the socket of the first molar, and then a transverse cut was made below the base of the growth through what seemed to be healthy bone between it and the edge of the jaw. The tumour was separated from its attachments and removed, but the little ridge of bone which he had relied upon to preserve the arch of the jaw was broken at either end at the operation, it was, however fixed in its natural position by wire sutures to the two main fragments. Recurrence unfortunately again took place, and seven months later free operation became necessary. Mr. Boyd now felt that every effort should be made to completely exterminate the disease, and therefore removed the bar of bone which had been saved below the second growth which seemed quite healthy, together with about 1½-in. of the jaw, trenching largely on the base of the coronoid process. With the double object of preventing flexion of the posterior fragment, and of keeping the two fragments apart until a denture could be fitted, he broke off a piece of stout steel knitting needle of suitable length and used it as a spanner, fixing the hinder end in the dental canal and the anterior end in a pit bored in the anterior fragment. Mucous membrane and skin were sewn together over this, and the jaw kept at rest. Six weeks later on endeavouring to remove the needle it could not anywhere be found ; deciding to wait the course of events, the wound soon healed completely, and the patient might be described as comfortable ; she could separate her incisor teeth for at least one inch, and the chin was in the mid-line, but closure of the jaw was performed only with considerable force ; the soft parts had fallen in on the side of the removed bone. Mr. Boyd thought that in a similar case some of the deformity on the left side might be avoided by detaching the internal pterygoid from its insertion and allowing the masseter to draw the jaw somewhat outwards, also by using a thicker bar for the spanner, and placing it as nearly as possible on a level with the lower border of the jaw and by having it bent by the curve of the jaw.

Mr. Colyer's share of the treatment was the insertion of a vulcanite splint to keep the parts separate after the operation, and afterwards replacing the splint by an ordinary denture.

Mr. F. NEWLAND-PEDLEY congratulated Mr. Boyd upon the success of his case, and thought it most ingenious. It should not, however, be assumed that they had always failed hitherto by processes which were familiar to them. He must admit Mr. Boyd's plan was entirely new to him. He had always found a difficulty when a part of the jaw was removed in preventing deviation on the opposite side, and there was no appliance known to them which would keep the chin in position. In a case of removal of necrosed bone Mr. Newland-Pedley had used the Gunning splint,which was worn by the patient for five months, but in this instance he had the advantage of the periosteum remaining. In another case in which a portion of the jaw containing three teeth was sawn out he was unable to accomplish anything by artificial contrivance without displacement. The ingenious part of Mr. Boyd's case seemed to be that he managed to pin the pieces together. He should certainly take a lesson from Mr. Boyd's experience.

Mr. J. H. BADCOCK related a somewhat similar experience. A patient of Mr. Rose's suffered from necrosis of the lower jaw, a portion of which Mr. Rose resected from the periosteum leaving the ramus. Mr. Badcock saw him some few days afterwards and the chin was drawn considerably to the left side. A Gunning splint was applied but the part left gave so much trouble that Mr. Rose resected that also. The splint, however, did very well. About three or four weeks later the man left for America ; at that time the periosteum seemed to be filled with fibrous tissue, here and there one seemed to feel bone. Some six months afterwards Mr. Rose heard from him and he said his bite was all right. Unfortunately nothing further had been heard of him since.

Mr. JAMES STOCKEN suggested that platina would probably be preferable to steel.

Mr. C. ROBBINS reminded the Society of a case reported by himself some time previously in which a piece of glass had been tolerated in the cheek for 33 years, and inferred from the fact that glass might be a suitable material if properly shaped.

Mr. G. Cunningham adverted to the work done in this direction by the celebrated French surgeon, Professor Ollier, in conjunction with the dentist, M. Martin, both of Lyons, and called attention to the fact that in all the operations detailed in the latter's book, "*De la Prothèse immediate appliquée a la Resection des Maxillaires.*" The dentist was called in *before* the operation, so that the splint was made *before* the operation was performed. Mr. Martin's experience was that vulcanite and platina had given the most satisfactory results.

Mr. Storer Bennett congratulated Mr. Boyd on the successful termination of his case, if at that time it could be said to be terminated. Mr. Boyd had asked a question as to the most appropriate material for forming a spanner ; without being prepared to offer an opinion he (Mr. Bennett) would point out to Mr. Robbins that its brittleness and liability to fracture would make glass unsuitable. Ivory had also been mentioned, but that would be liable to absorption. He would mention that where lead bullets had been dropped into the pulps of living incisors they had given rise to very little irritation, and the ivory had grown close up to them, but where steel bullets had been used quite the contrary had been the result and the bullets had become rusted. Whether some substance like gold or platina would not be more suitable he thought they had nothing but hypothesis to go upon.

Mr. West thought the great objection to gold and also to platina would be their expense. The objections to a steel bar might be overcome by coating it with lead.

Mr. Sidney Spokes suggested that a vulcanite rod if properly made would be thin enough and strong enough ; it would also be non-irritating. It might be used too for building up the new part upon if drilled with holes and filled with sterilised sponge.

Mr. Stanley Boyd said in reply, that in the first place he thought he guarded himself against expressing any opinion that the case had terminated. He felt confident that the spanner was there and should not be at all surprised to find it somewhere in the region of the chin, his conviction was strengthened by the belief that the denture alone could not possibly hold the bones in position. The cases which Mr. Pedley and Mr. Badcock had mentioned—cases of necrosis—were different to his own inasmuch as he could not hope for new bone but must depend upon a permanent spanner. With regard to several suggestions as to material, Mr. Storer Bennett had already replied for him as to the unsuitability of glass or ivory. Platina and gold of course would not oxidize. The work Mr. Cunningham had quoted was one that would naturally be referred to, but its size was somewhat forbidding. With reference to vulcanite, it had not such a smooth surface as steel, which had been selected on that account so that the granulation tissue might get as close to the material to which it was to be embedded as possible. If vulcanite could be as highly polished and would be strong enough it would be a very good material—perhaps the strength might be obtained by embedding a steel bar in vulcanite.

Mr. ROUGHTON read notes of a case of "Removal of an Ivory Exostosis from the Lower Jaw." The tumour was removed from a woman aged 25, and had been growing for about twelve years; it was about the size of a small walnut, and was perforated by a canal, through which the mental nerve passed in the recent state. It was removed by sawing it off, on a level with the surface of the jaw. The operation presented no difficulty. The structure of the tumour resembled that of compact bone.

Mr. FREDERIC EVE quite agreed with Mr. Roughton that it was not at all likely that the Exostosis was an Odontome. He (Mr. Eve) thought it grew from the periosteum.

Mr. STANLEY BOYD then narrated another case, viz., removal of one condyle from the lower jaw. The patient when admitted to the Charing Cross Hospital under his care was aged 25. When seven years old one of the teeth in the left lower jaw was extracted and after that she suffered from rather extensive necrosis of that part, resulting in fixation of it, and from the age of 7 to 23 she had not been able to do more than get the tip of her tongue between her teeth. She had lived only upon fluids and finely divided solids. The left half of the jaw was small and ill-developed as compared with the right, and in addition to this inequality it was noted that she could separate her teeth very slightly and bring them into perfect contact. The patient was put under gas and ether, and the jaw separated by screw-gags till the front teeth were about three-quarters of an inch apart, but this movement could not be maintained. About a year later the patient was again admitted and the left condyle was excised. The left eye could not be closed for some time after the operation, and the left cheek swelled considerably from hæmorrhage, but union was obtained and the patient soon left the hospital. Now, after an interval of two years, she was comfortable, though Mr. Boyd thought that the range of movement resulting from the operation was not so great as could be desired. The patient could, however, depress the jaw for half-an-inch, and was able to eat, she said, quite easily.

Mr. F. J. COLYER asked if there was any cause for the face being so much larger on one side.

Mr. STANLEY BOYD attributed it to the displacement of the soft parts.

Dr. H.W. MAUNSELL (of Nuneaton, New Zealand), said that in his experience with similar cases, the stiffness of the jaws was due to the extreme tension of the pterygoid muscle, the division of which obviated the difficulty. It was not due to any stiffness about the condyle of the lower jaw.

Mr. STANLEY BOYD asked the experience of members as to the result of opening an alveolar abscess through the face? One never did so of course if it could be avoided. He mentioned two cases of his own, one in which Nature made the opening ; the abscess arose from a premolar, and the pus ran down the face. The man had a sinus for three or four months, and Mr. Boyd cut down upon it through the face and he had the opportunity of watching it for some time, the sinus was deeply depressed and was certainly a great deformity, but it gradually rose higher and higher. In one case he made a tenotome puncture through the skin, in this case also there was a deeply depressed cicatrix.

Mr. EVE remarked that one reason—when Nature made the opening—for the deep depression was, that the sinus usually existed for some weeks prior to coming under the dentist's care, meanwhile the granulation tissue formed fibrous tissue, which again contracted and formed a sinus round the cicatrix. He himself had occasion at the London Hospital to make an opening through the skin, but he did not observe any depression in that case, he would, however, hunt it up and watch it still further.

Mr. STOCKEN mentioned that he had prevented an abscess bursting in the face by painting it with flexible collodion, and giving hot poppy head fomentations in the mouth. The abscess burst inside the mouth and there was no further trouble

Dr. H. W. MAUNSELL had opened abscesses in the face, but.did not remember any case in which there was a scar of depression and cicatrix. Of course in most cases where the abscess had been opened by nature the skin died over it and dropped off, leaving a scar behind.

The usual votes of thanks concluded the meeting.

Odonto-Chirurgical Society of Scotland.

The Annual General Meeting of the Society, Session 1891-92, was held on the 11th of March—the President, Mr. G. W. Watson, in the chair. The Treasurer (Mr. Mackintosh) tendered his report, which was of a satisfactory nature. After the conclusion of the formal business, Mr. John Turner exhibited the lower jaw of a man, *æt.* 56, in which there were seven praemolars present. On the right side there were four—two in the normal position, and two instanding, on the lingual aspect—the four forming a rough square. On the left side there were two standing in the normal position,

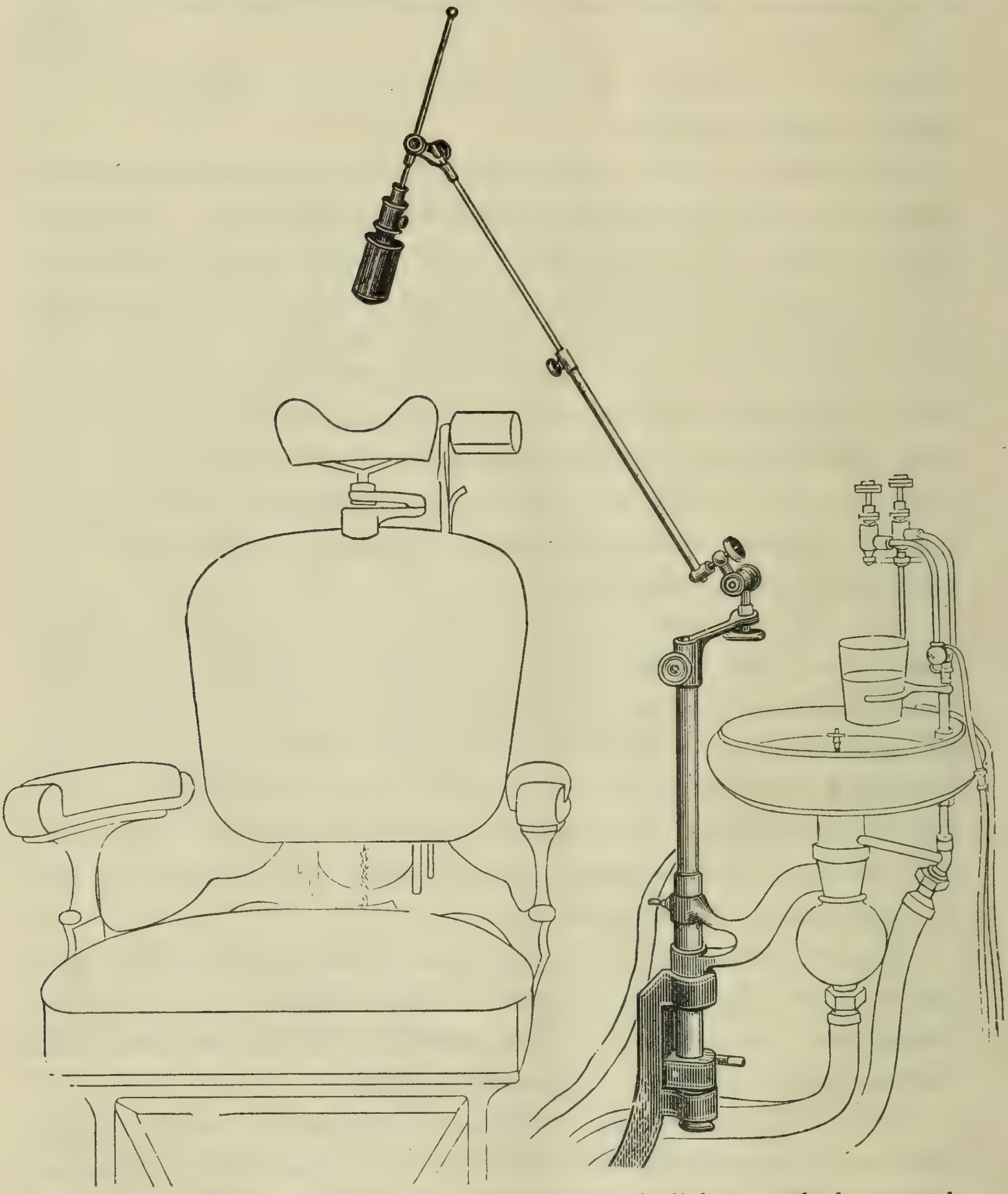

Fig. 1.—Showing the lamp in position for throwing the light upon the lower teeth.

though somewhat crowded out of line, the third standing in the lingual side between the two, forming a triangle. The supernumerary teeth possessed all the characteristics of the normal bicuspid teeth. The meeting then adjourned to a darkened room, and Mr. J. LESLIE FRASER, L.D.S. (Inverness), exhibited his Universal Electrical Mouth Illuminator and his Dental Electrical Switch Board (Fig. 1.) It consisted of a short bracket-arm, supporting an arrangement of joints to which was attached a couple of tubes, one telescoping into the other. A small fork was jointed on to the top of the inner tube. In this fork lay a third tube, which slid backwards and forwards as required. At one end of this sliding tube was a switch lamp holder, which carried the five-candle power lamp. A metal shade having a bayonet joint at one end, and a condensing lens at the other, was attached to this switch-holder. When the tubes are telescoped, the height of the lamp was about 14 inches, but it could be extended to double that length.

The lamp could be changed from one position to another (Fig. 2) instantly, and is absolutely rigid in any of them. Its parts were easily taken asunder if necessary. Should the old lamp need to be

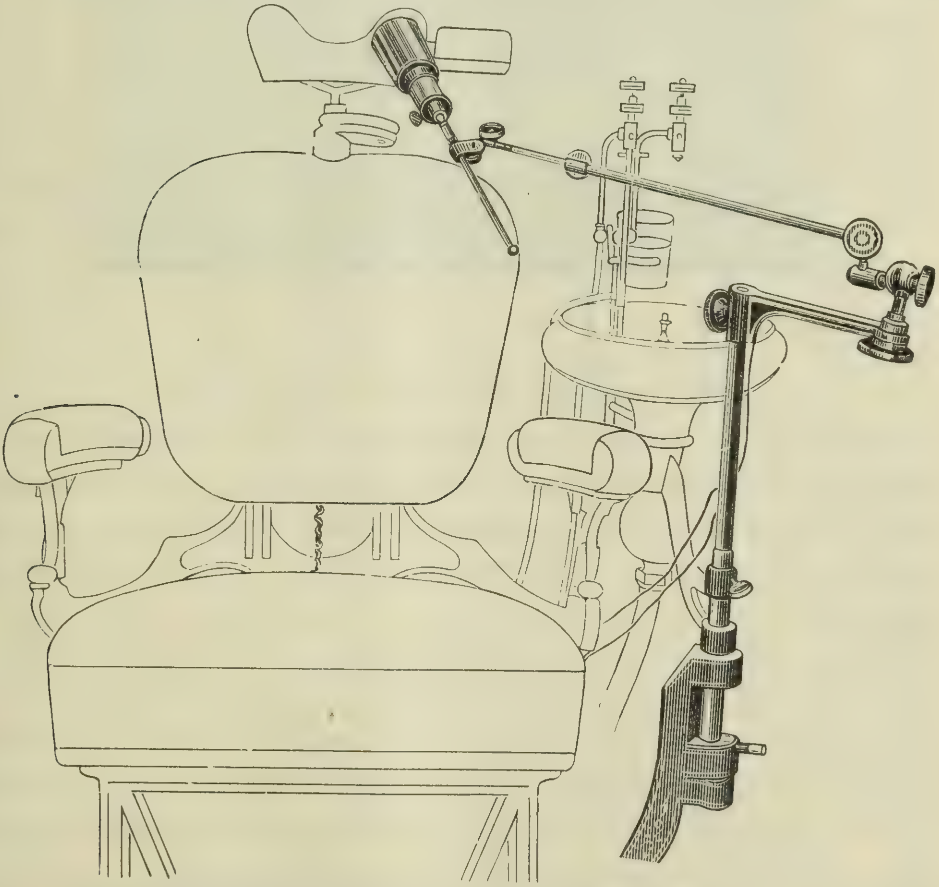

Fig. 2.—Showing the lamp in position for directing the light upon the upper teeth.

replaced by a new one, it could be done in less than one minute, no screws being used to secure the connections. The switch close to the lamp was one having a "special quick action," by means of which the light could be turned on or off at pleasure. After describing the drawbacks of the usual methods of obtaining an adequate current to work his light, Mr. Fraser said, he had made a switch-board for use with accumulators, which he described (Fig. 3.) It is arranged for use with six accumulators, this number being more economical than five. At the top to the right of the board, which is made of polished mahogany is a "master-switch." By means of this can be thrown on any number of volts up to the full working powers of the cells. Arranged along the lower half of the board are five separate "quick-brake" switches. Each of these has an automatic cut-out, which will fuse should too much current be thrown on. Below these switches are five movable plug-attachments, from which comes the flexible double wire which conveys the current to the various appliances. On the upper left hand corner is a volt-meter, registering any voltage from one-tenth to twelve. Beside this, to the right, is a smaller switch of the same kind as the five referred to above. This one is used when it is desired to pass the current through the volt-meter after it has gone through the master-switch. In this way, the exact

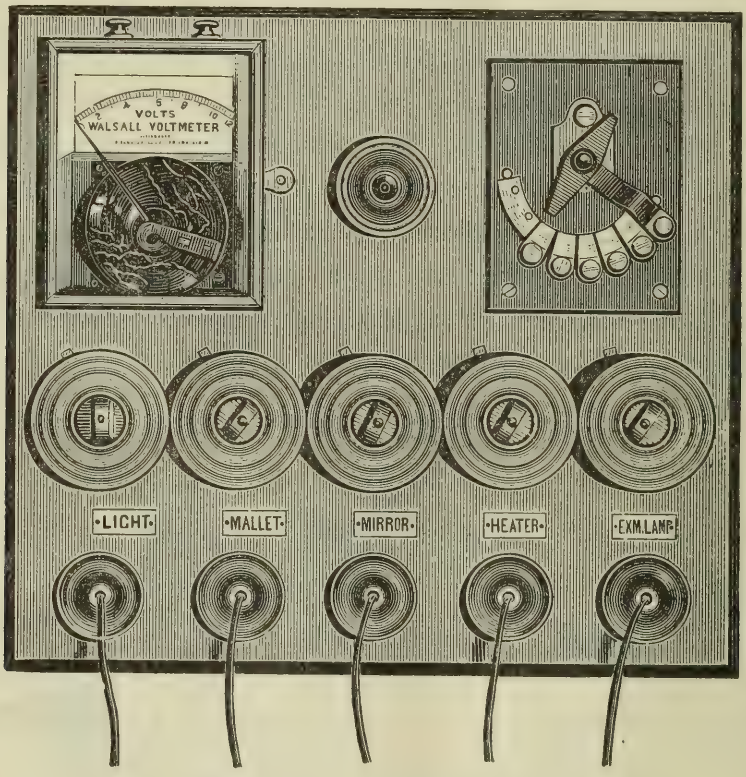

Fig. 3.—Electrical Dental Switch Board.

voltage turned on at the master-switch is registered. Underneath the five switches are a corresponding number of ivory plates, each one bearing the name of the appliance to which the plug-attachment belongs. The names engraved on his own switch-board were:—1. Light, *i.e.*, the lamp. 2. Mallet. 3. Mouth-mirror. 4. Heater. 5. Exam. Lamp. It is of great importance that accumulators should not be allowed to run down too far, for when this happens there is buckling of the plates, and consequently short-circuiting. It is, therefore, desirable that the dentist should have some ready means whereby he can ascertain at any moment the exact state of the cells. This is accomplished by turning, first, the master-switch round to the right as far as it will go, and then the small switch which admits the current to the volt-meter. The indicator will now show to a tenth of a volt the condition of the accumulators. There is a separate switch for each plug in order that the current may not be allowed to pass to any other instrument except those in use. This arrangement does away with the necessity which he would otherwise have of detaching the various instruments from their respective wires. He keeps the five different instruments in a small cupboard, each connected with its own conductor. They are all thus ready for use. The switch-board complete, costs £5 12s. It was manufactured by Messrs. Woodhouse & Rawson, Limited, to whom much credit is due for carrying out the instructions given them, most efficiently.

Mr. W. HOWARD GRAY, L.D.S. (Glasgow) exhibited a small Mouth Illuminator, for use in the mouth when gold-stopping, &c. It consisted of a small glass globe, $\frac{1}{4}$ of an inch in diameter, and $\frac{7}{8}$ths of an inch in length, inside of which was a small electric lamp, kept absolutely cold by a continuous current of cold water, either supplied from a tank or fountain-spittoon. The battery used is two Y-type "E.P.S." accumulators.

Mr. SHIACH, in referring to Mr. Fraser's exhibit, remarked that he had used, for the past six months, an electric apparatus of a similar description—the main difference being that his was set upon a pivot in the centre of an ordinary Allan bracket-table, instead of being attached to an upright stand. Mr. Shiach thought that the addition of a switch close to the lamp (as in the exhibit) was of considerable advantage, and suggested, as a further improvement, some arrangement by which the intensity of the light could be regulated, as in mouth lamp, The apparatus used by Mr. Shiach was supplied by Messrs. C. Ash & Sons. With reference to the utility and desirability of electricity in this connection, Mr. Shiach was of opinion that a great saving was effected, so far as the eyes were concerned, while at the same time the heat, so troublesome in gas and oil arrangements, was reduced to a minimum. The electric light was compared to that of gas reflected through a vessel of water, and to the light given by crystal paraffin used in a Telschow lamp.

Mr. Amoore had used a water globe in front of a large gas-light—tinting the water green with a weak solution of copper sulphate. This he found very effective for most purposes ; but in using it for gold fillings of a protracted nature, he found the glitter of the gold very trying to the eyes. He was assured by Mr. Shiach, who spoke from experience, that the lamp in question gave a very soft light, and he had not suffered in a similar way when working with it. With regard to Mr. Howard Gray's small mouth illuminator, it was the most perfect he had seen, the difficulty of the irradiation of heat—a fatal one unless duly reckoned with—being completely overcome, so that the lamp could be retained in the mouth for an indefinite period without any rise in temperature ; and the mechanical dexterity exhibited in bringing about this desired end reflected no little credit upon its originator. It was probably due to this same skill which enabled Mr. Gray to work without finding the lamp in the mouth an encumbrance ; but to him (Mr. Amoore) it seemed that the addition of the illuminator when the mouth had already possibly a saliva ejector and other accessories inside, was rather a serious drawback. However, this might be only a matter of practise ; and, in any event, it would be supremely useful at times, and was an important addition to our operating room.
Mr. Watson read his paper on "A New and Improved Method of Treatment in Empyema of Antrum." In cases of empyema of antrum, I have long felt that a method of treatment which would facilitate the cure of, and reduce the period of treatment required was a great desideratum. For the last two years I have been trying methods which are a valuable aid in this direction, and which, I thought it would interest you to know about. In the first place, the metal drainage tubes, as commonly applied, are far too small to effectually treat such conditions ; so the first thing I did was to increase very considerably the size of tube* used (a specimen of which

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*The tube in question measured an inch, with a diameter of 5-16 of an inch at the wider end, which was inserted into the antrum, narrowing to a diameter of 3-16th at the other extremity.

I hand round, so as to enable me to employ dry antiseptic or other powders, to insufflate the cavity of the antrum with, or syringe it out in the usual manner. At the suggestion of my colleague at the Throat Infirmary, Dr. Hunter Mackenzie, we tried curetting the lining membrane of the antrum in bad chronic cases, which can readily be done through the drainage tube by means of instruments which I specially devised for the purpose, and which are now before you. We reasoned that if diseased nasal and other mucous membranes were benefited by the operation, good results would be obtained in bad antrum cases, and this we have found to be quite the case. The curetting instrument is passed through the antrum tube, and the cavity thoroughly scraped out, taking care not to use too much force; the cavity is then well washed out with hot boracic solution. This operation can be repeated in four weeks or so if necessary, but it is generally found that once is sufficient. It has been found that by means of this operation, the use of a large tube combined with antiseptic insufflation and douching, three to eight months is sufficient for the cure of the worst cases—the usual run of such being from eight months to two years. Some discussion has been going on in the *Lancet* and other medical journals as to whether empyema of the antrum has its origin, as an extension of disease, from the nasal mucous membrane or the converse. From the experience and history of a considerable number of cases which I have had through my hands during the last eight or ten years, I am inclined to believe that the most frequent origin of empyema of the antrum is the presence in the jaw of abscessed teeth, and the constant flow of irritating pus over the nasal mucous membrane must cause, in a number of cases, disease of that membrane, which accounts for the frequency with which we find associated with disease of the antrum polypoid growths or in hypertrophied or diseased condition of the nasal mucous membrane. Of course, I do not deny that in some cases disease of the antrum may primarily have a nasal origin but am convinced that the other is the more frequent of the two. An extremely instructive and interesting case of empyema of the antrum came into my hands in August, 1890, the history of which I thought would interest the members. Patient, male, *æt.* about forty, was from England, and had been suffering from antrum disease for five years. He had consulted several medical practitioners, followed their advice, and with no benefit. About a year previous to his coming to me, the patient had visited the Edinburgh Royal Infirmary and was told to get several teeth extracted. He went to a dentist in the neighbourhood in which he resided in England, and had them extracted. The dentist gave patient an instrument (a hand bur) to open into the antrum, which he managed to do, and was in the habit of keeping a piece of pointed wood in the hole to keep it from closing up. Patient went one day to the same practitioner to let him look at it, and get it syringed out. After working away for some time at the opening into the antrum, he told patient there was no piece of wood in the opening. Patient insisted there was, but was assured that if it had got into the antrum it would do no harm. Patient was very pale and unhealthy looking when I operated on him, the purulent discharge from both nose and antrum being very excessive. I enlarged the opening previously made by patient through the socket of first molar, curetted the membrane, put in a large drainage tube, and gave directions about syringing and insufflating the antrum. He returned home, but every report I got from him was to the effect that he was not one whit better. Some months after, I asked him to come through to Edinburgh again, when I got Dr. H. Mackenzie to examine carefully the nasal cavities, but they were found to be all right. He returned home again, but the same bad reports came from him, and his case fairly puzzled me. In the month of May, however, I got a note from him, which explained the difficulty. He informed me that, while sneezing a day or two before, the piece of wood, about which he had never told me anything, came down the antrum tube into his mouth, having lain in the antrum for two years. The piece of wood, which I hand round, is nearly an inch long tapers to a point, and is sixth of an inch at its thickest end. It is a curious fact that I did not come across or feel this foreign body when curetting the antral cavity, and shows how much care should be exercised in the examination of the antrum in prolonged and difficult cases. After the removal of the wood, matters improved very rapidly; and from a note which I had from patient the other day, I gather that he is about all right again.

Mr. Amoore remembered a similar case. It occurred in an hospital patient, who was under treatment for antral trouble. An attempt was made to enlarge an opening into the antrum, which was already patent after the removal of the first molar, by inserting a piece of dried sea-weed. On attempting to remove this plug, the upper portion had became dilated within the antrum, and, as was subsequently discovered, had became detached.

After a fruitless and somewhat protracted course of treatment with boracic and other lotions, extending over two or three months, the opening was enlarged, under an anæsthetic, the foreign body discovered and removed, a cure speedily following. Mr. MACLEOD had been in the habit of keeping the opening into the antrum patent by means of a rod or wire. This rod was simply a cylindrical prolongation or projection from a little vulcanite plate fitted over the socket, and which plate was attached to an adjoining tooth. The diameter of the rod was about 1-8th or 3-16th, and this was quite sufficient for the purpose of irrigation or drainage. By this little device the antral cavity could be easily flushed by the patient filling the mouth with water—medicated or plain—and forcing it into the cavity and through the nasal opening by the action of the tongue and buccinator. This was quite as efficient as a syringe, and much more convenient and comfortable for the patient. Mr. Macleod deprecated the use of the sharp spoon and considered it a misnomer to call his tube a drainage tube. A little washing soda in the water used for syringing the cavity was, he thought the most useful *antiseptic* in these cases, being both detergent and stimulating—the one thing needful being to diagnose the origin of the trouble, and remove the cause.

Dr. GUY remarked that in his opinion, an ordinary rubber drainage tube of small calibre in most cases fulfilled every requirement, and having been threaded, might most conveniently be retained *in situ* by a silk ligature cast round an adjacent tooth. He thought the tube was very commonly retained too long, becoming a source of irritation, and keeping up the condition it was intended to alleviate. Cases had come under his notice in which the removal of the tube had cured the disease. Concerning the curetting, the data were insufficient for the formation of an opinion as to its value. It should be borne in mind that the loss of function by the ciliated epithelium lining the cavity involved the keeping patent of the artificial opening to perpetuity. Long standing ulceration or exuberant granulation being present, he could conceive the expediency of this treatment; but the difficulty of locating such lesions, and confining the scraping of the parts thus diseased, in an irregular and sometimes multilocular cavity like the antrum, would prevent its general adoption. His own feeling was that, second only in importance to a correct diagnosis of the nature the cause of diseased conditions involving the mucous lining, periosteum, or bony wall of the antrum, was the treatment of these conditions in accordance with general surgical principles, and by the simplest methods compatible with efficiency. In two recent cases of very bad chronic empyema, one of no less than six year's standing, the treatment he had adopted had resulted in the cure of the condition—in the first case, after five months ; in the second, in six weeks. Briefly described, it was as follows :—The antrum was punctured (by the burring engine) above the alveolus, over the situation which the second molar would have occupied had it been present. During the first week the cavity was syringed daily with a solution of Tr. Iodi in water (2 drachms in 10 ozs.) ; afterwards boracic lotion was alternated with insufflation of resorcin—the patient supplementing these measures by several times daily forcing through from the mouth, with the opposite nostril closed, a lotion of phenol sodique. An india-rubber drainage tube was inserted and tied, in the one case, to the wisdom tooth ; in the other, to the central incisor—these happening to be the only teeth available. The tube was kept in for a fortnight. There was nothing remarkable in the future history of these cases, which progressed steadily towards recovery. He was hardly likely to meet many cases justifying a more unfavourable prognosis than these two appeared to do when first seen, and was impelled to the conclusion that the vast majority called for no more heroic treatment, and demanded the exercise of no more ingenuity in the construction or retention of tubes.

Mr. WATSON, replied and said, Mr. Macleod and also Dr. Guy recommended the washing out of the antrum, by the patient forcing the fluid through the artificial opening, by means of the buccinator muscles. This he considered both an objectionable and unscientific proceeding, as by so doing the fluid gets charged with pyogenic and other microbes from the oral cavity, likewise *debris* of food, which it is most important to exclude—the method of syringing, through tube fitting into antrum tube, not being open to this objection. Mr. Rees Price asked if it was from the history of such cases which he had had through his hands that he was able to say that the most of them had a dental origin? Yes, it was, as it was after careful investigations, assisted by a nasal expert, that this conclusion had been come to. Dr. Guy wished to know what the object is in curetting the antrum. This is, to remove from the membrane diseased growths or masses of bacteria which are so commonly found in conditions of this description, and which can readily be demonstrated by making glass preparations of pus. Curetting, as he had advised, consisted in merely scraping lightly the diseased membrane, and not scraping it bare to the bone, although he might remind Dr. Guy that some of the best nasal surgeons are in the habit now-a-days of scraping away freely diseased nasal membrane, with good result.

Students' Society, London Dental Hospital.

Ordinary Meeting, held May 16th, 1892, W. B. Paterson, Esq., President, in the chair. The minutes of the previous meeting were read and confirmed.

The following gentlemen were proposed as members of this Society by Mr. J. P. Smith, and seconded by Mr. W. S. Holford :— E. E. Young, S. J. Hankey, H. W. Hardy, R. F. Lane, S. E. Dunkin, W. J. Leigh, E. H. A. Mackley, H. E. Mackley, H. G. C. Reeves, H. Blake, A. E. Bettridge, W. Rispin.

The President announced that a communication had been received from Mr. Canton and Mr. Truman, who had kindly acted as judges respecting the Students' Society Papers, and that in their opinion Mr. S. H. Hayward's paper "On Antiseptics used in Dental Surgery" was the one most deserving of the prize ; and the prize would therefore be awarded to that gentleman.

On casual communications being called for, Mr. Holford showed a model in which a supernumerary tooth was erupting behind and between the two upper central teeth.

Mr. Parris exhibited two cuttings he had taken from papers which concerned the profession of dentistry.

Mr. Prideaux, on behalf of Mr. H. Davis, presented to the Society a book on Anæsthetics written by the latter gentleman ; he also showed models he had taken of a mouth, the centrals of which he believed were marked with the Hutchinson notch.

The President wished the molars had been more included in the models, although personally he relied chiefly upon the upper central incisors as test teeth in congenital syphilis.

Mr. J. F. Colyer asked, respecting the last case shown, if there were any other symptoms of congenital syphilis marked on the patient, as he had lately seen teeth simulating very nearly the true syphilitic teeth, but which on investigation were thought to have been produced by rickets.

Mr. J. P. Smith also related a case of doubtful markings on the central teeth, but these doubts were confirmed later when the patient suffered from keratitis.

Mr. Goodman showed the roots of a second upper molar tooth which had been extracted and fused to these roots, but inverted was what appeared to be a diminutive wisdom tooth.

The President then called upon Mr. E. Moseley to read his paper on "The Preparation of Cavities." (See page 246.)

The President briefly alluded to the points for discussion in the paper, and asked Mr. Moseley to make his point a little clearer upon the matter of the convergence of a cavity's walls by indicating the extent.

Mr. Moseley replied that he meant that the walls should converge inwards, only slightly out of the perpendicular.

Mr. J. P. Smith in opening the discussion thought that the best plan for separating teeth previous to filling was by using strips of tape, and deprecated the use of dividing rubber, as with the latter trouble in the way if periostitis was more liable to be set up owing to its great power and quickness of expansion, he did not think that gutta-percha should be packed into deep cavaties at the back of the mouth as a means of pressing the gum away, but in these cases it was better to put on the rubber dam and ligature the piece of gum or cut it off with a lancet. He had found that bad edges in chalky teeth might be overcome by Mr. L. Matheson's method, and that was to use a corundum disk on the walls of the cavity until all chalkiness had disappeared. As for the double-ended excavators mentioned he strenuously advised all members never to use them unless they wished to lose an eye.

Mr. G. Northcroft did not agree with using separating material first and then the separators afterwards, for he thought that if the latter were used it would be unnecessary to give the patient more pain by separating a day or two before. He wanted to know how a matrix was to be removed after a contour filling had been done by its means, for it would probably, in the case of amalgams, by its removal, bring away part of the filling at the same time.

Mr. Mordaunt did not agree with cutting out the fissures in bicuspids unless actually carious. He always could tell if they were carious by means of placing some carbolic acid on the crown, and if they were so, the part affected became dark in colour.

Mr. Clarence did not agree with using cotton wool as a wedge in front teeth with large cavities, as he thought that when the wool swelled, the pressure produced would be transmitted to the pulp by reason of the thin layer of dentine. He also thought it most essential for cavities in the incisor region to have good opposing points. He also pointed out that in preparing the edges of a cavity with a chisel, care should be taken to use the instrument up and down, and not in one direction. He also recommended the use of very thin chisels, such as those sold for scaling purposes.

Mr. STEELE could not recommend the use of screw posts in place of retaining points.

Mr. GOODMAN did not agree with the use of chloride of zinc as an obtundent in preparing a cavity, but thought that sharp excavators, used properly, were far better.

Mr. HAM pointed out that no mention had been made of erosion cavities. In his opinion it was most difficult to prepare them, especially when under the gum.

Mr. RANKIN observed that the writer of the paper had not said how long the separating material should be left in.

Mr. BRIAULT also deprecated the use of rubber strips for dividing the teeth, but advocated temporary gutta-percha ; this, he said, should be packed between the teeth a week or so before the operation, and renewed two or three times so that a gradual separation was made ; and when sufficient, a piece of this gutta-percha should be left in for a day or so to keep the separation and to allow pain, if present, to pass off ; by this means a filling could be done with very little pain to the patient. He had found that when it was impossible to get a strip of tape between the teeth if a piece of rubber dam were inserted, this usually made room for the first thickness of tape a day after. He pointed out that in preparing cavities for porcelain inlays, very shallow ones should be made.

Mr. MORDAUNT mentioned a case in which a large and painless separation was made, enough for a central tooth, by a patient who used to place gutta-percha between his teeth to "keep the cold out."

Mr. GILLETT did not agree with making cup-shaped cavities for gold fillings. He also thought that the edges of a cavity, previous to the introduction of an amalgam filling, should be cut square, as the filling was not so likely to go at the margin as it would with a feather edge.

Mr. W. MAY described cases of very sensitive teeth which were most troublesome to fill. He had found that if an amalgam and osteo combined was first placed at the bottom of the cavity, and the upper part filled with amalgam only, a very good result was attained.

Mr. Goodman also recommended this last filling.

Mr. J. F. Colyer did not think any harm was done by first separating with with temporary gutta-percha and then using the separators after ; as regards the preparation of cavities for amalgams, he pointed out that the depth in such should be greater than the width, he also advocated Kirby's principle of packing amalgams, viz., that the lower two-thirds of the filling should be packed moist. whilst the upper third should be dry, in this manner an equal distribution of the mercury was obtained with the prevention of shrinkage. He had seen fittings so packed in after fifteen years with the best results, he mentioned nitrate of silver as a very good obtundent, and warned gentlemen against using double-ended instruments. Respecting the cutting out of cavities in front teeth, he considered it very bad practice in operating to cut from the front for the sake of being able to introduce the filling easier, and wished that more cavities were cut from the back.

The President briefly remarked upon the discussion, and then called upon Mr. Mosely to reply, who, in answer to Mr. Smith, hought that where time was an object the use of the rubber strips was most convenient, he at the same time yielded to the opinion expressed on the use of double-ended instruments. Regarding the matrix mentioned by Mr. Northcroft, he thought that it might be left in until the filling hardened, if for a day. Respecting fissures in bicuspids, he did not advise that they should be cut out, but left until it became necessary from caries. He intended screw points for retaining fillings for use only in the case of dead teeth. He mentioned, in reply to Mr. Gillett, that if the gold were placed properly in a cup-shaped cavity, he did not think it would rock. He pointed out that where the separators were found to slip, a piece of composition should be wedged between them and the gum, this method was very useful in the case of the Perry separators, and was suggested by Mr. Matheson.

The President then proposed a vote of thanks to Messrs. Canton and Truman for examining the papers, to Mr. Moseley, and to those gentlemen who had kindly brought forward casual communications, and announced that the next meeting would be held on October 10th, when Mr. D. P. Gabell would read a paper "On the Different Fillings used in the Mouth."

The proceedings then terminated.

THE DENTAL RECORD, LONDON: JUNE 1, 1892.

FAILURES IN EXAMINATIONS.

It is matter of no slight interest to us alike, as members of the profession and as relations of those who are "up for" examinations, to ascertain the why and the wherefore for so many failures. The usual reasons assigned by the students themselves are curious, but are hardly capable of sustaining a rigid investigation. It is said "So and So" is severe, or else somebody else is sarcastic, the hypothetical examiner may even be said, vampire like, to suck out the students' knowledge (save the mark!) merely to cast away his nerveless frame "referred" for six months. Another excuse is that the candidate "cheeked" the examiner, and this is alleged in a manner, contrived to convey the hint that the candidate knew more about the whole subject than the examiner, a theory which possesses more ingenuity than probability. As a matter of fact, none of these causes have probably ever been the means of getting any candidate referred. Examiners are as a rule, as human as the rest of the world, and much prefer getting answers to simple questions, than being put to the infinite pains of cudgelling out facts from the brains of an unwilling, if capable, student. The "showing off" stage dies a very early death in an average examiner's career, the poor man is so heartily sick of the whole business, that even self-glorification is lost sight of in mental weariness. When we are told that a student has failed in his examination, we may be perfectly sure that the fault lies with the candidate, and not the examiner. Nervousness may play its part, but even this seldom lands a youth in failure, the usual causes of want of success are to be sought in bad preparation. A lad may be crammed with facts concerning every item of dental lore, from the latest views on the dentition of the hake, to those touching the treatment of sensitive dentine and yet fail badly. Why is this? Simply, because a mere accumulation of disconnected facts cannot be marshalled into form, for due answering to any given question. The student who knows very little, but knows that little well, stands a far better chance than the encyclopædic youth, who like the Strassburg geese, is stuffed to bursting point with facts and theories, none of which has he made his own. The average run of students are divisible into two categories—the stupid ones and the careless ones on the one side and the well educated and bright ones on the other. These last, if they choose to apply, can pass any examination easily, but the others are now-a-days in a parlous state. The stupid men goaded by the sense of their own shortcomings, think they can compel Nature by violence, to grant them a power which she has denied them. They work day and night, disregard the simplest laws of health and common sense, read far into the night, at meals, and neglect outdoor exercise. They ever think they will prevail by their much reading. Of course they must fail, and it is a merciful dispensation that fail they should, for common sense and judgment are of far more importance in the conduct of life, than an extra diploma or two. If such students were at the commencement of their career taught *how* to learn; to digest their mental food as carefully as they would their tough mutton, and resistant beef, if they were taught to curtail the reading to a few hours, and to acquire that rare but all necessary knack of complete concentration to the matter in hand, they would without toil or distress, pass all ordinary examinations with credit, and, what is more, would know the outlines of their work. We have known students to sit down in cold blood to read forty or sixty pages of some poor man who had written on Dental Surgery or Medicine, and triumphantly tear the dripping towel from their heads when the last page was thumbed, and these silly people really believed they were working! How many men bearing F.R.S. after their names could master forty pages of a new subject at one sitting, and these men have learnt to learn all their lives? Forty pages of a text book is equivalent to about half-a-ton of super-concentrated extract of meat, and this would prove a tough meal even for a tiger. The careless man differs from the conscientious but stupid man, in that he lacks all system. He may read hard one week, but then devotes himself to cricket or what not for the next week. He takes no notes and muddles up what he reads, because he won't take the trouble to test his own knowledge of what he has read. Our students are as a rule overtaught. They are helped so much over the stiles, and shown so many short cuts to knowledge (or passing their examinations, two things not absolutely synonymous), that they will not exert themselves to acquire knowledge. They go to their "grinds" and hope, delusive aspiration! that some of what they hear may stick and supplement this tutorial lactation by the furious cramming of one of those little boiled down manuals which are intended to help students to get up their facts at the last moment; waistcoat pocket volumes, which, but for the advertisement such a proceeding would give, should be publicly burned by the hands of the hangman. Less work, better work; less muddling and more concentration would send up the averages of our schools at once. Be it remembered it is the average men—the majority—who set the range of the examination in all pass examinations, the examiners are merely there to see who attain the possible average, and as a rule they do their duty honestly.

GOSSIP.

South Wales Echo says:—"This is the story which reaches me from the veracious lips of Mr. W. John, dental surgeon of Cardiff, who evolves from it a moral having mighty reference to the sagacity of dogs:—At about half-past ten o'clock last night, a light brown retriever dog came to his house and bumped with his head on the inner door till the servant went to him. On the door being opened, the visitor walked in and showed a smashed paw, which he evidently wished attended to. Mr. John at once dressed the wounded limb, and the retriever before leaving expressed his thanks by gratefully and effusively licking Mr. John's forehead. Mr. John was naturally much struck at such an exhibition of canine sagacity, and the incident led him to remark that the poor, dumb patient showed a great deal more appreciation of the little service rendered him than many of the human visitors who have received a great deal more attention at his hands.

Is not this very pretty? The touching spectacle of the dog gravely licking the surgeon's forehead in grateful appreciation, and departing to receive the congratulations of his fellow dogs!

With such stories as these some of the great weeklies are deluging their readers. It is a burning topic of the day, the intelligence of animals; and really, the doctrine is preached so zealously that it leads one to the unhappy conjecture that man is, really, low down in the scale of reason. But see how lucky dogs are! Mr. John says he was more grateful than many human beings. That is distinctly unfair. If Mr. John would undertake to attend professionally upon mankind, and only ask as a fee that the patient should lick him on the forehead, I feel certain he will have no cause to complain of ingratitude. It is so easy to pay off a debt with an expression of regard."

Dental News.

Royal College of Surgeons of England.

Examination for Diploma in Dental Surgery.

DENTAL ANATOMY AND PHYSIOLOGY AND DENTAL SURGERY.

May 9th, 1892.—5 to 8 o'clock, P.M.

N.B.—The Candidate is required to answer at least two of the three questions, both on Dental Anatomy and Physiology, and on Dental Surgery and Pathology.

Dental Anatomy and Physiology.—1. Mention briefly the general characters of the dentition of fishes. As examples, describe the teeth of Pristis and of the Pike. 2. Describe the alveolo-dental membrane. Whence does it originate, and what purposes does it serve during the growth and after the completion of the tooth? 3. Describe closely the articulation of the upper with the lower teeth in man. What are the ordinary and extreme movements of the lower jaw, and how does the temporo-maxillary articulation provide for them?

Dental Surgery and Pathology.—1. Why should you hesitate to relieve crowding of the incisors in a child by extraction of temporary canines (*a*) in the upper (*d*) in the lower jaw? Under what circumstances would you recommend it. 2. What is dental exostosis? When would you suspect it, and how may it be diagnosed? What are the microscopic characters of the tissue? 3. Write prescriptions for i. A tooth powder; ii. A wash for use in a much wounded mouth; iii. Anodyne applications to relieve pain after tooth extraction; iv. Use in ulcerative stomatitis.

May 9th, 1892.—2 to 4 o'clock, P.M.

N.B.—The Candidate is required to answer at least one of the two questions, both on Anatomy and Physiology, and on Surgery and Pathology, unless he is entitled by the Regulations to exemption from any of those subjects.

ANATOMY AND PHYSIOLOGY.—1. Give the course of the blood from its entrance into the right side of the heart to the aorta; explain the action of the valves of the heart. 2. Give the origin and insertion of the two pterygoid muscles, with their nerve-supply.

SURGERY AND PATHOLOGY.—3. Describe the pathology of an alveolar abscess; give its symptoms and treatment. 4. Give the causes and treatment of hæmorrhage from the gum and jaws.

Royal College of Surgeons of Ireland.

DENTAL EXAMINATIONS—MAY, 1892.

THE FOLLOWING ARE THE PAPERS SET IN THE LAST EXAMINATION.

ANATOMY.

1. Mention the different classes of teeth. Describe their anatomical elements and microscopic features. 2. Describe the development of a tooth. 3. How many deciduous teeth are there in a child of four years. 4. Describe the process of mastication, and enumerate some of the muscles in the process, giving their origin and insertion. 5. Give the origin and insertion of the external pterygoid muscle and its arterial supply.

SURGERY.

1. Define the term "fracture," and give a classification of fractures. 2. What is hæmorrhage? How would you proceed to arrest it in the following cases—(*a*) a wounded artery; (*b*) a ruptured varicose vein; (*c*) a tooth socket. 3. What are the symptoms of disease of the lower jawbone? 4. Describe a case of cellulitis of the neck. 5. What is an aneurism? and what varieties are met with about the face?

DENTAL METALLURGY.

1. What are the distinctive properties of a metal? 2. Under what conditions will the contact of two fillings produce a current of electricity? 3. Distinguish between a metallic sulphate, sulphite, and sulphide. 5. What salts of zinc are used in dentistry, and how are they obtained. 5. State approximately the composition of brass, gun metal, bell metal, Babbit metal, Spence's metal.

DENTAL SURGERY.

1. What preparation would you use to bleach teeth? Write two or three formulas. 2. Name some of the deformities of the jaws, and describe one of them. 3. Name some of the principal germicides. Write formulas for dental use. 4. What is a fistula? Give cause and treatment? 5. Inflammation of peridental membrane; classification and treatment.

Pass List of the Royal College of Surgeons of Ireland Dental Diploma.

Dental Examination.—The following gentlemen having passed the necessary examination have been admitted licentiates in dental surgery of the college.—John Hutchison Edward, Manchester, and James William Smith, London.

The World's Columbian Dental Congress.

To be held in Chicago, August 17th to 27th, inclusive, 1893. Chairman, Dr. W. W. Walker; Treasurer, Dr. J. S. Marshall; Secretary, Dr. A. O. Hunt; Executive Committee, Drs. L. D. Carpenter, J. W. Crawford, W. J. Barton, J. Taft, Cincinnati, C. S. Stockton, L. D. Shepard, W. W. Walker, A. O. Hunt, H. B. Noble, Geo. W. McElhaney, J. C. Storey, M. W. Foster, A. W. Harlan, J. S. Marshall, H. J. McKellops; General Finance Committee, Drs. L. D. Shepard, Chairman, A. L. Northrop, T. W. Brophys By the concurrent action of the Southern Dental Association, July 16th, 1890, and of the American Dental Association, August 5th, 1890. it has been decided to hold in Chicago, in 1893, a World's Columbian Dental Congress. Each Association appointed five men from its own membership, and each Association voted "that this Joint Committee have power to fill all vacancies, and shall add to its membership either one, three or five more members, as it may deem advisable, and when this Committee is so completed, it shall be clothed with full power to take such action as in its judgment it may deem best for creating an organization for the purpose of holding a dental meeting in Chicago in 1893, which the reputable dentists throughout the world shall be invited to attend, and that any action that this Committee may take in the premises shall be final and binding." The Southern Association appointed Drs. Carpenter, Crawford, Barton, Taft and Stockton. The American Association appointed Drs. Shepard, Walker, Hunt, Noble and McElhaney. The Joint Committee elected Dr. Storey, retiring President of the Southern Association, Dr. Foster, retiring President of the American Association, and Drs. Harlan, Marshall and McKellops; and so completed the Committee. The General Executive Committee, thus appointed and empowered, at its first meeting at Excelsior Springs, in August, 1890, elected as Chairman, Dr. W. W. Walker; as Treasurer, Dr. J. S. Marshall; as Secretary, Dr. A. O. Hunt; and as General Finance Committee, Drs. L. D. Shepard, A. L. Northrop and T. W. Brophy. It has held meetings at Washington, January, 1891, at Saratoga Springs, in August, 1891, and at Chicago, in January, 1892. The next meeting will be held at Lookout Mountain, in July, 1892. The Committee has transacted a great amount of business, and with remarkable harmony and unanimity. As an illustration of its devotion to the trust committed to it by the two great Associations of the country, all but two of its members were present at the recent mid-winter three days' meeting in Chicago. As a further illustration of its intention, it has voted "that any member of this Committee having failed to attend three successive meetings, without a satisfactory explanation, will be considered to have vacated his position on the Committee." The work of the Committee so far has been largely preliminary, a detailed statement of which will be given to the profession through the journals. The General Finance Committee has prepared this statement in advance of such publication, that those who are asked to assist it as State Finance Committees may know what has been done and what will be expected of them, so that in accepting appointments each may do it intelligently, and for the use of the State Finance Committees in soliciting subscriptions. It is expected that papers and reports of great interest and value will be presented in such numbers and volume that the transactions will make two or three large books. It is hoped that there will be funds to print and illustrate these transactions in as full and perfect a manner as is possible, and so make the books an indispensable adjunct to the dental library and working text-books of every dentist who aims or claims to be an educated man. As an illustration of the scope and breadth of the investigations and productions of the Congress, the following Committees have been voted, most of which are already filled and the Committees at work :—1, A General Finance Committee ; 2, Programme Committee ; 3, Committee on Exhibits ; 4, Committee on Transportation ; 5, Committee on Reception ; 6, Committee on Registration ; 7, Committee on Printing Transactions ; 8, Committee on Conference with State and Local Societies ; 9, Committee on the History of Dental Legislation in this and other Countries ; 10, Auditing Committee ; 11, Committee on Invitations ; 12, Committee on Membership ; 13, Committee on Educational and Literary Exhibits ; 14, Committee on Clinics in Operative Dentistry and Oral Surgery ; 15, Committee on Prosthetic Dentistry ; 16, Local Committee of Arrangements ; 17, Committee on Essays ; 18, Committee on History of Dentistry in the United States ; 19, Committee on Nomenclature ; 20, Committee to Promote the Appointment of Dental Surgeons in the Armies and Navies of the World ; 21, Committee to devise Means for the Care and Treatment of the Teeth of the Poor ; 22, Committee on Microscopy and Bacteriology ; 23, Committee on Prize Essays. This completes the list of Committees so far as voted. There will doubtless be others, for it is intended to cover the whole ground of Dental Science and Art. From an examination of the list it will be seen that Committees Nos. 1, 2, 4, 5, 6, 10, 11, 12, and 16, are principally business Committees, while Committees Nos. 3, 7, 8, 9, 13, 14, 15, 17, 18, 19, 20, 21, 22, and 23, are purely scientific. To illustrate the work planned, Committee No. 8, styled Committee on Conference with Local and State Societies, under the general chairmanship of Dr. J. Taft, consists of a State Committee from each State of three to seven members, each State Committee working under its Chairman and Secretary, and making a total membership of about two hundred. Each State Committee among other duties is asked by Dr. Taft to—*Fourth.* Procure a History of Dentistry in your State, giving account, so far as you can, of the pioneers, those who first practised in your State, and the date, and any matters of interest pertaining to the same. *Fifth.* Give the number of dentists in your State, also the Dental College graduates. Also give number of honourable practitioners, so far as feasible. *Sixth.* How many Dental Societies all told, are there in your State, and what is the membership of each?

How many dentists in your State have membership in Societies outside of your State? *Seventh.* How many in your State have added anything of value to the literature of dentistry, and in what way? And by whom? *Eighth.* What discoveries and improvements, in modes of practice, instruments, appliances or materials, have been made by dentists in your State, and by whom? *Ninth.* What influence has the law regulating the practice of dentistry had upon the profession in your State? Each State Committee is expected to do the work for its own State in as full and complete a manner as possible, and prepare a report for that State "upon the status and condition of the profession, past and present, and may give, at least, a proximate idea of its growth, resources and power." Then all these statistics and material are to be turned over to Committee No. 18, as an authentic basis for its work of preparing a History of Dentistry in the whole country. Committee No. 18 consists of—J. TAFT, Cincinnati, Ohio; LOUIS JACK, Philadelphia, Penn.; F. T. VAN WORT, Brooklyn, N.Y.; F. J. S. GORGAS, Baltimore, Md.; H. L. MCKELLOPS, St. Louis, Mo.; E. G. BETTY, Cincinnati, Ohio; J. B. PATRICK, Charleston, S. C. By vote, the Chairman of this Committee is "allowed to add to this Committee any person or persons that he may deem proper and of advantage." One can hardly realize the value of the results of the work of Committees No. 8 and 18. It has been voted that the membership fee shall be ten dollars. To be collected only from residents of the United States. It has been voted "that the membership shall consist of legally qualified and reputable dentists (as defined in the Code of Ethics of the American and Southern Dental Associations) residing in the United States, and all foreign dentists regularly qualified by the laws of the countries from which they come, and such other scientific persons as may be invited by the Committee on Invitations" (Committee No. 11.) It will be seen that the doors are open to every reputable dentist in the United States. All will be welcome except those who are illegal practitioners in States having laws, or who are violators of the Code of Ethics. Should any such join, or attempt to join, and it is known, the name of such applicant will be referred to the Membership Committee. It is advised that no subscription involving any right of membership be received by the State Finance Committees from such as are known to be ineligible to membership. The General Finance Committee submitted to the Executive Committee the ollowing plan, and it was unanimously voted that such plan should constitute the "rule of action":—RESOLVED—That the General Finance Committee be authorized to guarantee to contributors who would be eligible to membership as follows: *First.* That every contributor of ten (10) dollars shall receive the transactions if he does not attend, but will be expected to pay the membership fee of ten (10) dollars in addition, should he attend the Congress. *Second.* That every contributor of twenty (20) dollars shall receive the transactions of the Congress if he does not attend, and if he attends and joins the Congress, his receipt for contribution shall be accepted by the Treasurer as full payment of the membership fee of ten (10) dollars. *Third.* That every contributor of thirty (30) dollars or upwards shall have all the advantages of the contributor of twenty (20) dollars and in addition shall receive free the Commemorative Medal which will be struck. From the foregoing it will be seen that the solicitor for contributions can assure each contributor of ten dollars or upwards that he will receive a substantial return, whether he attends or not. To accomplish all this work will demand a large amount of money. The items of stationery, printing and postage will call for considerable ready cash, which must be advanced by those doing the work, in addition to their generous and gratuitous labor, or be furnished, by the prompt, liberal and patriotic contributions of the dentists of the whole country. Careful estimates place the amount to be contributed in advance of the Congress at thirty thousand dollars. It is judged by all who are conversant with the work done up to the present time that this Congress will mark an epoch in dental progress and be the largest in numbers and most valuable in results of any dental meeting ever held. The General Executive Committee feels that a great trust has been committed to it, which it will endeavour to manage in a broad and liberal spirit. The General Finance Committee has perfect confidence that the profession will respond promptly and generously to its call for contributions to ensure the success of the Congress and the honor of American dentistry. The receipt which the Treasurer, Dr. J. S. Marshall, will mail to each contributor, will have printed on it the conditions before mentioned as part of the contract between the Congress and each contributor.

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Original Communications.

IMPRESSION TAKING.

By H. LLOYD WILLIAMS, M.R.C.S., L.D.S.

Assistant Dental Surgeon, London Dental Hospital; Dental Surgeon to the West London Hospital.

When we consider that all the subsequent steps in the making of an artificial denture however carefully performed, are labour thrown away unless the model to which the work is adapted is perfect, it is difficult to insist too strongly upon this initial operation being performed in the manner which the accumulated experience of those who have observed carefully, indicates as the best.

A great deal has been written on the selection of impression materials, and of those which have been in use three seem to be favoured, viz., gutta percha, modelling composition and plaster of Paris. Of these, authorities agree in placing plaster of Paris first, and modelling composition second in order of their reliability. But it is somewhat remarkable that though there is such an absolute concurrence of opinion among those who have written on this subject, modelling composition is far more favoured in practice than plaster of Paris. In referring to methods of taking impressions this fact will be further discussed.

A good impression material ought to fulfil the following requirements: 1, To take an impression without displacing the parts; 2, To accurately retain the exact impression during removal; 3, To retain its form after removal,—that is it must neither expand nor contract.

It is urged by some* that the impression material should be selected according to the material of which the plate is going to be made. (*a*) That gutta percha contracts slightly and compensates for the expansion of plaster, and other things being favourable it would therefore be the proper material if the plate is to be vulcanite. (*b*)

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*Harris's System of Dental Surgery, Richardson's Mechanical Dentistry.

That plaster of Paris expands and compensates the shrinkage of the zinc die, therefore it forms the best material where the plate is to be of swaged metal. These considerations shall not detain me, because in treating of the physical qualities of plaster the difficulties represented will disappear.

Modelling composition has undoubtedly a wide application, and yet it does not fulfil any of the requirements previously set forth except on rare occasions. Where impressions for partial dentures are required and the teeth do not present marked wedge-shaped interdental spaces, it takes a sufficiently good impression and is but very slightly displaced, but where the interdental spaces are markedly wedge-shaped and especially where the space represents the loss of but one tooth, the displacement during removal is considerable. This displacement is not all represented in the drag which is apparent, but necessarily extends further in the direction of least resistance, thus the impression of the adjacent soft parts—the palate in the upper—will be marred. This is a fact which is often lost sight of by those in the habit of using this material, and it is a source fruitful of inconvenience. It is often also urged that an impression of undercuts is not required, this is only partially true, but if it were it is not an argument in favour of using the modelling composition, because where there are undercuts it goes into them, and the subsequent disfiguring of the impression during removal is the greater, not only in the part represented as the undercut, but in all the immediately surrounding parts. It is clear that the force required to change a mass of composition formerly wedge-shaped into one with parallel or nearly parallel sides, must largely disfigure the adjacent parts. This is the explanation of that mysterious shortening of an individual tooth which sometimes occurs and is only discovered in the plaster model.

This material is invaluable in taking an impression where the teeth are very loose; it does not of course give an accurate impression, but it is the only material applicable, and with great care a sufficiently good impression can be obtained. In such cases it is always advisable to adjust the composition in such a way that it only takes those parts of the teeth which are absolutely necessary for the making of the denture.

As material for taking impressions of fractured jaws, I consider modelling composition to be by far the best; it can be used while very soft and consequently with but very slight pain to the patient, and should be removed before it has hardened much. The impression in these cases cannot be expected to be accurate.

Wax should be discarded, as it requires so much pressure in its manipulation.

Plaster of Paris more nearly approaches the ideal impression material than any other, it does not displace soft parts, and during removal fractures in such a manner that the pieces can be accurately put together, but it does not without special treatment retain its shape perfectly after removal, this drawback can be so effectively remedied that the expansion when it takes place is almost infinitesimal.

Experiments with plaster of Paris made by Dr. Spence of San Francisco and Dr. Bowman McLeod of Edinburgh are given in Richardson's Dental Mechanics. They are of extreme interest, and I propose to give as short and concise a summary here as I am able to. Dr. Spence tested the effect of duration of stirring, and consistency of the mix on the hardness and expansion of the cast. Firstly three mixes were made and stirred the same length of time.

1. Very thin ; 2. Very thick ; 3. Medium consistency. The last showed greater hardness and least expansion.

The next test had reference to duration of stirring ; 1. Mixed medium thick and poured immediately ; 2. Mixed medium thick and stirred about two minutes, both poured from the same cupful of plaster, the latter expanded about five times as much as the former and was also softer.

The addition of alum gave the same results when the same methods of mixing were used.

Dr. Spence concluded that by mixing plaster of medium consistence and pouring immediately the casts made thereby set harder, expanded less, and the expansion set in slower than by any other mode of mixing, the only drawback being that it set more slowly.

The following remarks of Dr. McLeod's are very interesting—he says, referring to plaster casts in the ordinary impression tray, " I found invariably that the centre portion,—the palatine portion of the cup,—always presented an open and well defined space between the upper surface of the impression cup, and the lower surface of the hardened plaster." He found further on, pouring plaster into irregular models such as the impression of the mouth, the point of shrinkage was not always persistent, but seemed to be controlled by the superincumbent layer of plaster, and this led to the conclusion that while in some instances the defect would determine itself on the palatine ridge in the shape of an exaggerated dome, at other times and that more frequently in under dentures it would express itself in irregular lateral expansion.

By the use of potash alum these defects were corrected, the impressions fitted the trays perfectly, showing no sign of expansion or warpage. The proportion of alum was 3 to 4 ounces to a gallon of water, that is considerably under saturation (which is 1-11.)

Common salt also reduces the expansion to a minimum, and makes a good mixture for impression taking. To recapitulate, according to Dr. Spence who used the best plasterers's plaster expansion is reduced to a minimum, by mixing the plaster of medium thickness and pouring immediately, the alum hastening setting, but having no effect on the rate of expansion. The alum used by him was the ammonia alum in his original experiments, but he found no difference in results by using potash alum. Mr. McLeod, experimenting with the ordinary plaster used in the workroom in this country, found that potash alum had a most marked effect upon the amount of expansion, reducing it in all cases to an inappreciable amount. These experiments are highly interesting and they are of first rate practical importance. They show that by mixing our plaster with certain substances we can obtain an impression, and a model from it which are practically perfect.

It was formerly, and is even now by many, asserted that plaster of Paris is only or mostly applicable to edentulous maxillæ. On the other hand there are others who do not deem it, by any means, the best substance in such cases, if the gums are very soft and easily displaced, and the ridge of bone at the junction of the two upper maxillæ along the middle of the palate prominent. And, for this reason, if the plate is made to an accurate impression of the parts at rest it will ride on the parts of greatest resistance unduly, the soft gum giving but very slight resistance. The remedy advocated does not appear to be one that deserves any recommendation—it is to use modelling composition or wax with great pressure so as to compress the softer structures. This method is clearly very objectionable, because the compression where it does take place is uncertain, and the main result is displacement of the parts.

Plaster is applicable in edentulous cases, and is, undoubtedly, the best material we have in all these cases, we can with it get an exact impression of the parts at rest, and this is really the important matter, the hard ridges can be accurately defined by comparison of the model with the mouth, and a little thin plaster brushed over them. The applicability of plaster does not, however, cease with the taking of impressions of edentulous jaws, it will, in the majority of cases, be the best material where some of the teeth are still standing. In such mouths the interdental spaces are often pronouncedly wedge-shaped, often a tooth stands alone, its neck being much narrower than its crown from recession of the gums, perhaps, as is not infrequently the case, there is on one side of it, the space representing the loss of only one tooth. In a mouth, where such conditions exist, a good impression in anything but plaster is physically impossible (I give modelling composition in the hands of skilful men every credit, but skill cannot overcome physical impossibilities), whereas in making use of plaster an almost perfect impression can be easily secured.

Again, for impressions for gold bar lowers plaster gives a vastly superior model to modelling composition, these cases demand the very best models possible, and the undercuts are frequently most useful. It is in a great number, perhaps the majority of instances, impossible to get a thoroughly reliable model in modelling composition, whereas with plaster of Paris, it can be secured, and even with ease except where there are small spaces from the loss of single teeth. Perhaps the easiest of all models next to edentulous lowers to take in plaster are those with the six or eight front teeth standing, they rarely fracture at all.

Occasionally the gums, in cases where partial dentures are desirable are soft and easily displaced, it is in these cases much better even if the impression presents no difficulty from the teeth, to select plaster. These cases are sometimes very troublesome, but in my experience, a plaster impression has always overcome the difficulty.

The arguments used against the habitual use of plaster as an impression material are varied, those most commonly heard are—

1. It takes a longer time than modelling composition.
2. Patients object, and will not permit its use.
3. Difficulty of removal.

I have for some time observed the time expended in taking impressions in both modelling composition and plaster of Paris, and I am in some doubt whether in point of time there is any advantage on either hand. There is a gain of some time if an assistant softens the composition, but when the operator has to do this, there is not any gain over the use of plaster. It is mixed very quickly, and it sets again very quickly. Many operators advise retaining the composition from three to five minutes in the mouth, plaster, if in good condition, as it always ought to be, is scarcely ever retained more than three minutes, the time it takes to remove fragments will make it up to about five minutes. There is of course the possibility of the first model not being satisfactory, but that is not a fault exclusively of plaster.

With regard to the objection of patients—it is a strange thing that those who use plaster do not often encounter any one who objects more to plaster than to composition, it is the experience of many, that patients prefer plaster of the two because it looks so clean. One patient to whom I proposed a plaster impression some years ago declined in the most peremptory manner, and one patient recently would not have modelling composition, these are the only two cases of absolute preference in my experience.

The third objection is a real one, there often is great difficulty in removing a plaster impression satisfactorily. In dealing with this matter, it will be necessary to notice the form of tray which is most convenient, the best method of mixing, and the degree of hardness which will give the best results.

(*a*.) The simpler the tray the better always, and the less the variety of shapes within useful limits the better also.

There are three forms of cup which stand high in the favour of their advocates.

1. The ordinary pewter tray as sold at the depots.

2. The same tray lined with composition, and roughened to fit a cast formerly taken of the mouth.

3. Special trays made to a cast previously taken.

I will deal with these in their reverse order.

Special trays for plaster work are, as a rule, unnecessary, and they often only complicate an already difficult problem, they are usually made to fit very closely, they have very few angles or plane surfaces, as they are made to follow more or less the contour of the cast. These conditions do not admit of much thickness of plaster, and when fracture occurs, it is an extremely difficult matter to get the pieces into their proper places, besides, the plaster breaks into very small pieces. I do not condemn special trays *in toto*, but I do believe that they are more useful in taking impression with modelling composition.

2. Trays lined with composition are open to the same objections as the above, but when the composition has been carved out with care, it is rather easier to fit in the fragments. The greatest advantage of this method is that the tray leaves the composition readily on immersion in hot water when the model has been cast.

3. The ordinary pewter trays are the most useful, and their range of application is most wide. I have almost entirely discarded special trays or lined trays, years ago when first gaining experience in plaster work I always used special or lined trays, and much trouble they gave me, now for some years I have used ordinary trays. The advantages are that the fragments are fitted with much greater precision into a tray of such well-defined form, and secondly, the fragments are usually much larger than those obtained by the other methods. Beyond these there is the advantage of ordinary expediency, these trays are always ready and at hand.

(*b.*) The method of mixing. The "fine plaster" is the one I have found most reliable, it seems to me to make a cleaner fracture than the "superfine" when it does break.

As already indicated, there are two substances used to mix with the plaster, both have the two qualities of modifying the expansion, and quickening the setting of plaster, viz : potash alum, and chloride of sodium—common salt. Both are very useful on account of the two qualities named, but alum seems to make the plaster excessively hard, much harder than salt does, and on this account I have used the latter for a very long time with satisfaction. The amount of salt to be used is a salt spoonful to the mix—the quantity of plaster mixed never varies very much. The plaster is mixed of medium consistency, and used as quickly as possible.

(*c.*) For edentulous uppers especially it is not wise to allow the plaster to set very hard, because it adheres so closely to the mucous membrane, this adhesion increasing with the increasing hardness of the plaster.

In taking impressions for partial lowers, as for a gold bar, and where there is an interdental space of one or two teeth between the second bicuspid, and the symphysis, it is often advantageous to remove the impression the moment the plaster will fracture, in this way the impression of the gum behind will come away, leaving the plaster at the back of the incisors, this can remain until quite hard, and then removed carefully.

Again, where one or two molars are left standing, making the interdental spaces between them and a bicuspid or canine extremely wedge-shaped, it is advantageous to let the plaster set hard then remove the tray and fracture the plaster in the mouth. This is not such a difficult operation as it would appear to be to those who have not attempted it.

The operation of plaster model-taking is difficult, but a perfect model can only be obtained by the use of plaster, and the task of overcoming the difficulties.

AMBIDEXTERITY IN DENTAL OPERATIONS.

By Fred. W. Ta'Bois, L.D.S., Eng., Dental House Surgeon, Guy's Hospital.

It will be generally admitted that one of the many qualities a practical dentist should possess is that he should be able to use his hands with dexterity and adroitness—in fact have perfect control of their movements. Nothing is worse than to see a clumsy operator, and, while his manipulations on the patient can be better imagined than described, such a man is usually said to be "all thumbs" or "double thumbed." Now, as the acquirement of manual ability is a quality which is best gained in early life, and if put off to a later period is increasingly difficult of attainment, so I venture to hope that these observations upon the subject of ambidexterity in dental operations may be of use more especially to young operators and workroom pupils.

The advantages of ambidexterity accruing to dental operations are so many and varied that no apology is needed if the subject is somewhat fully treated. As regards time—a not unimportant element to the busy practical man—much is saved, and the quality of the work is also improved by being able to use the left hand where the use of the right is almost impracticable, to say nothing of easy and certain manipulation in the place of frequently difficult and uncertain.

Again, should a dentist injure his right hand, making it awkward or painful to hold instruments, the unhurt left hand can now relieve the wounded member, and the gain is great and obvious.

In several dental operations the left hand may be useful. Firstly, extraction of teeth. A student is taught to use extracting forceps with the right hand, and deservedly so, but if he would in addition give his left hand a little attention, he would find his patience more than rewarded. Standing on the right side of the chair the operation of removing roots and teeth on the right side of the lower jaw is more easy and certain; one has a far better view into the mouth, than when standing behind and looking over the patient's head ; and should occasion require the extraction of any roots or teeth in the upper jaw, the operator need not move an inch from his position ; and if the patient is taking an anæsthetic the anæsthetist can hold the patient's head firmly between his hands from the commencement of the extraction.

Again, suppose an erupting wisdom tooth is to be extracted on the right side of the lower jaw, when the soft parts are swollen and œdematous, with some amount of suppuration, it may require two or more attempts to remove the tooth, especially if the alveolus be firm ; but by operating with the left hand a clear view is gained at once, and the the chances of its successful extraction greatly enhanced.

Secondly, in scaling of the lower front teeth—often a tedious and awkward task to do conscientiously—by using the left hand for the right sides of the teeth, the operator will find his work much easier.

Thirdly, as regards the filling of crown cavities in lower molars, with cohesive gold, if one can use the plugger in the left hand, working from behind over the patients head, the undercut on the buccal aspect of right side teeth, can be very much more easily and certainly filled, than by using the plugger in the right hand, and, working in front ; and, similarly, the lingual undercut of a lower molar on the left side.

Lastly, the interchange of a plugger from the right to the left hand and *vice versa* during a large filling is a a great relief, and prevents either hand getting tired.

Many other instances of the advantages of being able to use the left hand well, in addition to the right could be mentioned, and if any one will impartially give the instances quoted a fair trial these hints will not have been written in vain.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE Ordinary Monthly Meeting of the above Society was held on 13th ultimo at 40, Leicester Square, Mr. J. Howard Mummery, M.R.C.S., L.D.S., Eng., in the chair. There was a full attendance of Members and visitors.

The PRESIDENT said that it was his painful duty to have to announce two losses by death since the previous meeting. Mr. Felix Weiss, who had long been a member of the society and had rendered valuable service as Librarian, and also as President, had, as they were aware, passed away a fortnight previously. Mr. Alexander Fothergill, of Darlington, an old practitioner and member of the society, had also lately died. He was sure that the members of the society would join in the vote of condolence which had lately been passed by the council.

Mr. H. Williams Messenger, L.D.S.I., of Hampstead, was proposed for membership from personal knowledge by Mr. W. B. Paterson, and general knowledge by Mr. Henri Weiss and Willoughby Weiss.

Mr. William Rushton was ballotted for and duly elected.

The LIBRARIAN (Mr. ASHLEY GIBBINS) had only to announce the receipt of the Smithsonian Report for 1889 and 1890.

The CURATOR (Mr. STORER BENNETT) had received one specimen, a lower vulcanite plate with two clasps for carrying two central incisors. The clasps passed round the two central incisors. The plate had been in the patient's mouth fifteen years, and was entirely encrusted in tartar, which had no doubt been deposited and caused absorption of the bone. The plate was embedded in soft tissue and nothing else. The society was indebted to Mr. Redman, of Brighton, for this specimen. Mr. Storer Bennett had also just had handed to him a specimen which he had not had time to examine, it was a rough cast of two teeth, evidently a case of false gemmation. It was sent by Mr. Wells, of Tasmania.

Mr. PEARCE GOULD communicated a case of fracture of the neck of the lower jaw, in which Dr. Murray, of the Middlesex Hospital, was associated with him. These cases were so rare, that Mr. Gould felt that no apology was needed for bringing it before the society. The patient, F.S., aged thirty, was driving in a dog-cart on April 10th, when she was thrown violently out, falling on her chin. She immediately felt pain in front of the right ear, and blood flowed freely from the chin and lower lip. The patient presented herself at the Middlesex Hospital on the following day, and was found to have a deep cut across the chin and the lower border of the jaw bone, and another wound completely severing the lower lip. There was a swelling on the right side of the face just in front of the ear and below the zygomatic arch. Any attempt to open or close the mouth caused acute pain, and the patient complained of feeling a click when attempting to do so. The line of the teeth in the two jaws did not correspond, the lower teeth being displaced backwards and to the right, so that the interval between the lower central incisors was below the right lateral incisor tooth. By pressing forward the right angle of the lower jaw, this displacement was corrected, and at the same time crepitus was plainly felt. The old-fashioned splint and four-tailed bandage was found sufficient to retain the jaw in its proper positon. After three weeks the splint and bandage were discontinued. There was no reason to question the diagnosis, the pain, tenderness, crepitus, and swelling all localizing the fracture. The line of fracture had varied in a few cases but generally it passed obliquely, occasionally, however, it did so transversely, this fracture was said to be a rare one. In the last edition of Dr. Hamilton's classical work on " Fractures and Dislocations," it was stated that only nine cases were on record, but Mr. Gould believed them to be more common than Hamilton supposed.

The PRESIDENT remarked that it was a very interesting case, but he supposed that it had not fallen to the lot of anyone present to see such a case, he should, however, be glad to hear remarks.

Mr. W. B. PATERSON wished to say that he had seen a fracture of the ramus high up on the left side with fracture of the jaw on the right behind the canine, the result of a severe injury to a boy. A great deal of damage to the soft tissues and thorax also resulted. He had been in the hospital seven or eight days before Mr. Paterson saw him. Mr. Paterson had got as far as taking models of the mouth, and had put the jaw up for the time being in an ordinary chin piece with a pad for the condyle, which seemed to be keeping the part, which had been driven over to the other side by the force of the injury, in fairly good position ; of course there had not been sufficient callous to get it in position. Unfortunately the end of the case was death.

Mr. J. SMITH-TURNER said there was only one remark that he should like to make, and that was that it was very satisfactory to know that the old four-tailed bandage had not been forgotten, he believed it was a very useful surgical instrument. He might mention another satisfactory point to statisticians and those who were fond of getting figures together, viz., that this was stated to be the tenth case, so that in future they might work their figures in decimals.

Mr. BETTS saw a case about a month or six weeks previously. A lady fell from her horse, and was kicked by it under the chin between the left incisor and canine. The fracture was done up in a four-tailed bandage. Many of the molars were broken obliquely as if struck with a chisel and hammer. The patient at the time had very great pain in the region of the condyle, but what led him to mention the case was that neither the molars nor bicuspids met, although the molars were in good position, only the wisdom teeth met.

Mr. PEARCE GOULD then spoke upon the subject of "Excision of Dentigerous Cysts *versus* Incision and Drainage." He said it was merely an example of the application of general surgical practise to special cases. The treatment of cysts in all parts of the body had been of great interest to surgeons owing to their peculiar origin, situation, and large size, and the peculiar way in which they responded to treatment. All kinds of treatment had been applied, and during the last two decades it had undergone considerable development; surgeons in the first place had been afraid to deal with them, then repeated tapping had been the practise, but this had been abandoned altogether because of its unreliability, there were also risks attending even such a simple operation as tapping cysts. Then injections had been tried and abandoned because they often failed to cure and invariably sets up excessive irritation. Another plan was to incise the cyst and stuff it with some material, but this again was found to be long in curing. Then surgeons took to incision and draining, but it had invariably been found that to drain a cyst meant a very long convalescence, so that now they had come to treat cysts by excision, and that seemed to him to be the method which should be applied in all cases except those in which some special indications to the contrary were present. All had experienced the tedious repair of simple periosteal dental cysts when opened and drained, or stuffed; such cavities often went on discharging for many weeks or months. This was due not only to their secreting lining membrane, but to the yielding nature of their walls and frequently also the tissues surrounding them. Mr. Gould saw no reason why such cysts should not be excised. In the spring of the present year, Miss E. F., aged

40, noticed a swelling in her cheek which had been about twenty months growing, it grew slowly at first and then rapidly. In March it had attained the size of a pigeon's egg, the first molar was decayed level with the gum and the right upper bicuspids were absent, and there was no sinus and no discharge. On March 9th chloroform was administered and Mr. Gould first removed the right upper molar stump, this was immediately followed by a gush of blood. He then cut through the mucous membrane over the cyst and separated the former from the cyst wall gradually working all round and quite easily shelling out the entire cyst, the cavity that was left appeared to be a bony wall entirely, there was nothing soft and no hæmorrhage, there were no teeth in the cyst, he put a little lint over the gum for the first twenty-four hours and then syringed it with Condy's Fluid, the result far surpassed anything obtained by draining. When the patient came back a fortnight later the cavity was reduced more than one half in size, and a fortnight later still it was no larger than a large pea. It had not been his lot to meet with a cyst as large as a hen's egg close within the size of a pea in six weeks before.

Mr. PATERSON wished to ask whether Mr Gould found either or both of the absent bicuspids? He also desired to say with regard to the drugs which created a violent inflammation, he had used in five cases a solution of chromic acid, in the first case it was a cyst outside the antrum quite chronic, he plugged it with a strip of lint soaked in a strong solution of chromic acid which produced violent irritation, and then a day or two afterwards the gangrenous slough of the cyst was drawn out with a pair of tweezers. He had seen that occur twice with chromic acid, it looked uncommonly like the lining of the cyst. With regard to packing the cyst with lint, he thought it a very bad practice, because the edges fray out and pieces were apt to be left in the cyst. He had two apparently intelligent hospital patients whom he treated for some months with disappointing results, on a close examination of the cysts in one eight strips of lint, and in the other five were found, each patient having assured him that she always took out the strip just the same length as it was put in.

Mr. CORNELIUS ROBBINS said that within the last four months he had had a case which well bore out what the writer of the last communication had stated. A patient, aged about 60, came with a large fibrous cyst on the lower canine, he made an incision, and packed it with carbolized lint. He saw the patient the next day, but not liking the appearance of the case, sent her to Mr. Christopher Heath, who removed the cyst, and the opening healed very rapidly. Mr. Robbins had since made a set of teeth for the patient.

Mr. E. LLOYD WILLIAMS thought that unless Mr. Pearce Gould assured them that the cyst contained one or more teeth it was properly an ordinary dental cyst and not a dentigerous cyst.

Mr. WILLIAM HERN had treated several of these periosteal cysts, illustrating the uselessness of tapping. In most of the cases which had come under his care, he had enlarged the cyst, stuffed it with lint, and it had granulated up.

Mr. PEARCE GOULD in reply, said that he did not intend to convey that the bicuspids had not been erupted, he thought they had been removed. Mr. Lloyd Williams was quite correct in describing the cyst as a dental cyst, but he (Mr. Gould) could not quite agree with him as to the simplicity of treatment.

Mr. S. J. HUTCHINSON said that he did not propose to take up the time of the Society, but at a previous meeting when the discussion on the anterior protrusion of the upper teeth took place, Mr. Woodhouse alluded to the unilateral protrusion in adult patients. He (Mr. Hutchinson) had an exceptionally good model of such a case, and he thought that it would be of some interest—it was an exceedingly typical case. The patient was thirty-six years of age, and she had not noticed the protrusion of this tooth until within the last six or twelve months. He would not attempt to explain it on this occasion, but would ask the curator to place it in the museum as a very good case.

Mr. J. SMITH-TURNER said that he had been put down to call attention to the teeth of the Guanches. The Guanches, as they would probably be aware, were the ancient inhabitants of the Canary Islands off the coast of Africa. They were pretty well exterminated by their conquerors, the Spaniards, in 1474, so that the lower maxilla which he had to show them might be reckoned to date before that period. They were not likely to get mixed up with the teeth of their conquerors as they were in the habit of stowing away their dead in caves. He was indebted to Dr. Achilles, of Las Palmas, for the specimens. It appeared that "teeth harriers' had been there long before the scientists as the incisors and bicuspids were all gone ; it was the custom of dentists in those days to cut up human teeth to supply the wants of their patients, artificial teeth not then being known and the battle fields of Europe were ransacked for this purpose. His object was to call attention to these teeth. They would notice that the masticating surfaces were all ground very smooth, all the teeth of those who had lived to any age had that characteristic, they were worn away just as the ancient Briton's were worn, because they ground their corn in stone mortars, and these mortars were more friable. Another point with reference to the teeth was, that there were sundry marks of decay and traces of alveolar abscesses and caries, showing that these people had evidently enjoyed the luxury of toothache without having the advantage of dental care. He had also the skull of a mummy, the teeth of which were very perfect, the wisdom teeth had a transverse position and were growing into the twelve-year-old molars. Mr. Turner observed a large cavity in the twelve-year-old molars immediately opposite the crown of the wisdom teeth. He thought it a very good example of a well worn and well developed lower maxilla. Mr. Turner while in the Canary Islands picked up about 260 teeth which had dropped out of the skulls, they were mostly more or less decayed. He had also a specimen of a gemmated central and lateral incisor. He only saw a very few skulls of children, and in none of these skulls did he trace any decay.

THE PRESIDENT asked if Mr. Turner could say how these people fed?

MR. SMITH-TURNER replied that they were chiefly vegetarians.

Mr. DAVID HEPBURN showed a small instrument for gauging the length of canals in antral cases, describing it by the assistance of diagrams.

Mr. F. J. VAN DER PANT (KINGSTON-ON-THAMES) described a case of antral disease.

Dr. RÖDER (BUDAPEST), speaking in French, showed and described the advantages of a new elevator, for which he claimed that it might be used for the right or left side of the mouth with equal facility.

Mr. F. CANTON exhibited the model of a boy's mouth showing the left central abnormally large. It was not in his opinion a case of gemmation as the lateral was distinctly visible behind it.

Mr. ACKERY said with regard to Mr. Canton's model, that it certainly seemed to him that it might be a case of gemmation with a supernumerary or supplemental tooth.

Mr. F. CANTON did not think that it had that appearance at all.

Dr. Hewitt then read a paper on "The Anæsthetic effects of Nitrous Oxide administered with Oxygen at ordinary atmospheric pressures, with remarks on 750 cases."

When nitrous oxide free from all oxygen is administered by means of an accurately fitting apparatus so that at each inhalation nothing but pure gas is breathed and each expiration escapes into the surrounding air, certain phenomena more or less rapidly developed (with which all would be familiar) make their appearance. The object of the paper was to direct attention more particularly to the chief symptoms displayed during the two or three seconds immediately proceeding the removal of the face-piece for the performance of a dental operation. Dr. Hewitt was aware that different administrators carried the inhalation of nitrous oxide to somewhat different points, but he wished only to consider the case where the usual quantity had been given and not an unnecessarily large dose. Leading anæsthetists taught—and he agreed with them—that for dental operations nitrous oxide should be administered until the so-called "Stertor" is produced, In examining the phenomena of a patient at the juncture to which he had alluded, they would in the first place be struck by the fact that the breathing in the earlier stages, although deeper and quicker than normal, was regular and in most instances without snoring, but it would now be noticed to be irregular, jerky, or even tumultuous, possessing the characteristic guttural or snorting sound. The irregularity Dr. Hewitt believed to be due to one or other of two conditions, either the spasmodic elevations and depressions of the larynx, or to regular spasms of the thoracic and abdominal muscles ; the guttural sound was doubtless due to the former of these two conditions. Although it was frequently taught that slowing of cardiac rate occurred during gas administration, experience led him to an opposite view, he found it more common for the initial acceleration to persist and in many cases to increase, and that slowing of the pulse rate did not occur until air was admitted, when the abrupt fall in rate was almost invariably to be detected, it was at about the same moment that the colour of the face also might be altered to a degree which would depend upon the extent to which anæsthesia had been carried. Then they had too the muscular twitchings to which the term "jactitation" was often applied. The points then to which he wished to call particular attention were "stertor," "jactitation," and "lividity."

Now, whatever might be the physiological opinion of these phenomena it was a curious fact that they do not appear when oxygen is administered with nitrous oxide, in other words, Dr. Hewitt believed them to be entirely dependent upon the deprivation of oxygen, they were in no way dependent upon anæsthesia. Sir George Johnson suggested that Mr. Braine and himself (Dr. Hewitt) should administer nitrogen not only practically free from oxygen but with known and small percentages of this gas, to several patients at the Dental Hospital of London, and the phenomena were to the bystanders indistinguishable from those of an ordinary nitrous oxide administration. Now, if good anæthesia can be obtained from nitrous oxide without the phenomena to which he had referred so much the better, and without entering at length into any physiological details he might say, that by the addition of a comparatively small proportion of oxygen to nitrous oxide the three symptoms mentioned might be more or less completely prevented without interfering with the anaesthetic effects of the nitrous oxide. Dr. Hewitt was aware that Dr. Buxton had recently read a very able and thoughtful paper before the Society in which he had attempted to show that nitrous oxide administered in a proper manner produced no asphyxial phenomena, he (Dr. Hewitt) would not therefor re-open the discussion on that point, but no one he thought could deny that "stertor," "jactitation," and "lividity" produced by nitrogen were of asphyxial origin. Ordinary atmospheric air when mixed in sufficient proportions with nitrous oxide would prevent the three symptoms under consideration, but it was not nearly so suitable as oxygen itself for this purpose, owing to its useless nitrogen. As all would be aware, subsequent anæsthesia with nitrous oxide depended largely upon the previous inhalation, those patients who with few inhalations showed symptoms of anæsthesia remained a shorter time under its effects, reminding them of the old meteorological adage "Long foretold, long last, short notice, soon past." Nitrous oxide administered with a percentage of air capable of preventing the three symptoms would *also* prevent deep anæsthesia ; but if oxygen be substituted for air anæsthesia is almost certain to be established, oxygen being increased 32 per cent., displacing the useless nitrogen to that extent present in the air mixture. It is the want of available oxygen which makes pure nitrous oxide an irrespirable gas save for a very short period. By the use of oxygen with nitrous oxide we present the anæsthetic to the patient in a respirable form. Large volumes of the gas can thus be thrown into the patient's circulation—far larger quantities than one can administer in the absence of oxygen—and thus the resulting period of anæsthesia becomes appreciably prolonged. There was yet another important advantage in the employment of oxygen with nitrous oxide. Although the use of the latter gas, administered in the ordinary manner was, as would be well known, practically free from risk to life, still there were exceptional cases in which threatening symptoms had arisen. Now, without entering more fully into this part of the subject, there was every reason to believe that obstructed, shallow, or arrested breathing, cardiac depression, etc., will be far less likely to occur when oxygen is used with nitrous oxide.

The late Paul Bert was the first to attempt to secure tranquil anæsthesia from nitrous oxide in the presence of oxygen. After numerous experiments he arrived at the conclusion that an increase in the ordinary atmospheric pressure, was necessary in order to obtain good results. Time prevented a description of the details of Mons. Bert's ingenious and successful process, but as far as the anæsthesia was concerned the results were in the highest degree satisfactory. Not only were all asphyxial phenomena absent but the addition of the oxygen rendered it possible to give a continuous administration of nitrous oxide, enabling the performance of surgical operations of considerable duration and magnitude. Owing to the costliness, complication, and cumbrousness of the apparatus, Mn. Bert's chamber was now very rarely employed. His results were so remarkable that attempts were subsequently made to obtain equally satisfactory effects without the employment of increased atmospheric pressure, Hillischer had lately recorded a large number of cases, the results being very satisfactory. Dr. Hewitt then proceeded to describe in detail by means of diagrams, the apparatus which Hillischer employed. In 1886 at the instigation of Dr. Cunningham, who mentioned to him that experiments were taking place in Germany, he commenced experimenting with nitrous oxide and oxygen, and had made notes of 800 cases. He would not detain them with details, but simply say that he had tried no less than thirteen forms of apparatus, and as many as twenty-three ways of administering the gases, and he found that the best results were obtained by a 10% mixture of oxygen, there was no one percentage which would answer in every case, hence it was impossible to work with any form of apparatus in which the percentage was a definite one. The apparatus which he was able to exhibit was one which answered very well, and he would ask them to consider it in some detail. It would be seen that it had a stopcock and a regulating apparatus below, by which one might determine roughly the percentage of oxygen that was introduced into the nitrous oxide. There were two tubes, one fed from a nitrous oxide bag and the other from an oxygen bag, which in turn were fed by cylinders controlled by the foot. Dr. Hewitt found a difficulty in obtaining a sufficiently apparent excursion of the indicator without turning on too great a quantity of oxygen—it was necessary to control the oxygen to meet the requirements of each case. He accomplished this end by bringing the nitrous oxide tube up the middle of the oxygen tube so that the latter surrounded the former, and by arranging a little disc with minute holes, he was able to turn on one or more holes, each additional hole being shown on the dial of the indicator. Now a word as to how the apparatus was used; the only difference between administering nitrous oxide and nitrous oxide and oxygen was that one had an extra cylinder upon the ground and that one filled a bag of oxygen before administering. One bag of oxygen was quite enough to conduct any ordinary administration. The red bag was for oxygen and the black one for nitrous oxide. The bags must be *nearly* but not *completely* filled, any difference in the tension of the bags would force through proportions of the gases which were not intended. Before commencing the administration the anæsthetist should make sure that he has a sufficient supply of the two gases in the cylinders. In the next place, it is important not to charge the bags till immediately before the inhalation. The facepiece should be one which is capable of being applied to the face with the utmost accuracy, as a want of co-aptation which, in the case of nitrous oxide alone, would not be detrimental, would, in the case of the mixture be likely to lead to partial or complete failure. The valves of the apparatus should work efficiently and freely. After passing a small quantity of the gases through the bags, in order to free them from all traces of air, the anæsthetist should turn off the two-way stop-cock, and place the oxygen indicator at "O." Both bags should now be filled to about one-half with their respective gases, and the face-piece applied. Air would now be breathed freely through the apparatus, and the sound of the acting valves would prove that the face-piece fitted well. The patient should be instructed to breathe freely and moderately deeply, "in and out through the mouth." This was important, for as he commenced to breathe, so he would continue when the mixture was admitted. When the administrator sees and hears that breathing is free, and not till then, he should fix the oxygen indicator at "two" and turn on the mixture at the two-way stop-cock. Nitrous oxide with a small percentage of oxygen would now be breathed. After a few seconds the oxygen indicator might be turned to "three" and in a few seconds more to "four." In children, anæmic subjects, and debilitated persons the indicator might be moved to "three" and "four" more quickly than in strongly built or alcoholic individuals. During these manipulations the two bags must be kept as nearly as possible equal in size. It is rarely, if ever, necessary to replenish the oxygen bag during the administration, but the foot must be constantly kept on the nitrous oxide key. Considerable practice is necessary to keep both bags equal in size throughout. Should phonation, laughter, excited movements or struggling assert itself, the administrator should withhold more oxygen for the present, or even give less of this gas, by turning back the indicator for a few breaths. In forty or fifty seconds from the commencement of the inhalation the indicator might usually be got as far as "five," and in twenty seconds or so more may be allowed to point to "six," or even "seven." Generally speaking, it is not advisable to give more oxygen than this.

Of the 162 administrations which he had conducted with the last mentioned apparatus, 153 have been in dental practice. An analysis of the 153 dental cases of this series gives the following results: Sex, 123 females; 29 males; 1 not stated. Age, oldest patient, 61 years; youngest 7 years. Typical cases, *i.e.*, cases with good colour, no "jactitation" or "stertor," more or less complete muscular relaxation, and quietude during operation. These numbered 117, *i.e.*, 76·4 per cent. of the total number. Of the 36 typical cases, 20 showed variable degrees of lividity but were otherwise typical; 10 were rigid but were otherwise typical; 1 showed lividity with rigidity; 1 lividity with very slight clonus; in 2 cases the ordinary symptoms of nitrous oxide were accidentally allowed to appear; and 2 cases were intentionally terminated by nitrous oxide free from oxygen. Phonation was noted in 29 of the 150 cases, but it was usually not excessive. Muscular excitement, struggling or kicking were observed eight times only. The period of inhalation was taken accurately by the metronome in 67 cases, and works out as 110·5 seconds on the average. The longest inhalation was 186, the shortest 66 seconds. The available period of resulting anæsthesia was taken by the metronome in 69 cases. The average worked out as 44 seconds. The longest anæsthesia was 90, the shortest 21 seconds. The average number of teeth or roots extracted recorded in 129 cases works out as 2·7 per patient. Patients were always questioned as to pain, and with the exception of three cases every patient denied the slightest sensation, and in these cases the anæsthesia was perfect but not of quite sufficient duration to prevent the patients being conscious of the removal. As to the after effects, there was retching in one case, and a transient feeling of nausea without retching in another. Recovery is not quite so speedy as after nitrous oxide alone. To sum up, it would be obvious that patients vary a good deal in their behavior under nitrous oxide in the presence of oxygen. In most cases a very satisfactory and tranquil anæsthesia, free from "stertor," "jactitation," cyanosis and excitement, resulted from the use of the mixture. These might be termed typical cases. Of the last 153 administrations in dental practice 117 were typical. On other occasions symptoms were met with, as it were, midway between those of the typical cases and those of ordinary nitrous oxide cases. One might find for example that it was necessary to give less oxygen than usual, and therefore to produce a slight degree of duskiness; or the patient might be rigid throughout and not relaxed, as in the typical cases; or a certain degree of phonation and excited movement might occur; and lastly, in very exceptional cases it might be necessary to resort to the undiluted gas in order to finish the case satisfactorily. In order to successfully administer oxygen with nitrous oxide considerable care, watchfulness, and attention to detail were indispensable. A great many points had to be borne in mind during the administration. The accurate fitting of the face-piece was a matter of the highest importance. In a considerable number of instances Dr. Hewitt had administered nitrous oxide by itself and nitrous oxide with oxygen to the same patient on different occasions, a great deal was to be learnt from these cases. Whilst it was not at all an uncommon thing for the majority of a batch of patients to scream violently during extraction under ordinary nitrous oxide (although no pain was experienced), it was quite the exception for anything more than slight phonation to be heard during operation under the mixture. It seemed as if by the use of oxygen a somewhat deeper anæsthesia was rendered possible. Then, again, he had also noticed a better colour and less depression after the mixture than after nitrous oxide itself. There could be no doubt that oxygen was specially useful in children in preventing "jactitation." Though he had not administered the mixture to any very old patients, yet he felt convinced that it would be preferable to nitrous oxide itself, as less stress would be thrown upon respiration during the inhalation owing to the presence of oxygen. Speaking generally it might be said that the larger the quantity of any anæsthetic given, the longer would be the time taken for the effects to pass off. Whatever might be the disadvantages of ordinary nitrous oxide it must be admitted that it had one great point in its favour, viz., that the return to perfect consciousness after its inhalation was, with the rarest exceptions, remarkably quick and satisfactory. The speedy return to intellectual activity was connected with the short period of inhalation.

Finally, Dr. Hewitt's experience led him to the conclusion that notwithstanding the greater skill and attention to detail required, oxygen in combination with nitrous oxide had a distinct advantage in a large majority of cases in dental practice. He would chiefly recommend the mixture as suitable for children, young persons, anæmic and debilitated patients, and patients in advanced years.

Mr. G. Bailey very warmly eulogized the enthusiasm, ability, and energy which Dr. Hewitt's paper displayed. The elaboration and care with which he had put the subject before them must put many of them to shame. He had not had the experience of Dr. Hewitt with nitrous oxide and oxygen combined, but he found from Dr. Hewitt's cases, the average of " going off" was over two minutes, the average anæsthesia seemed to be 34 to 40 seconds, but curiously enough the number of teeth got out he did not think was so many as with ordinary nitrous oxide—2·7 did not seem to him to be a large number, he could not help thinking that with ordinary gas it would be more. The patient certainly had no loss of colour, no jactitation, no phonation, although he saw no objection to this, there was no rigidity, these were advantages. He went to the nurse at the Dental Hospital of London, and said to her " What difference do you find between the days we have with *pure* nitrous oxide and *the mixture*, have you less noise and less sickness?" And she said "Certainly." This was all in favour of *the mixture*. But he had observed in conversation with Dr. Hewitt that the complication of the apparatus, and the uncertainty of the amount to be given were objections. Now he would just take the list of cases he had had during the day :—

1. Pure oxide and a little ether administered. The eye of the patient was taken out in two minutes. Now with Dr. Hewitt's apparatus the patient would have been going under during these two minutes.

2. A boy aged 10, the lower molar removed, no change of colour, no jactitation.

3. Nitrous oxide and a little ether, ten teeth removed in one minute and a half.

4. A gentleman of large build, very muscular, tooth removed without any noise in one minute and a half.

5. A boy who had just come in from cricket, said that ether disagreed with him, had pure gas, tooth out in fifteen seconds.

6. Five teeth removed from a very ruddy full blooded man, no unpleasantness.

7. A young fellow of the bull-dog sort, very bad teeth, had gas only, the tooth broke but afterwards came out, no change of colour, no jactitation—barring a little kicking.

That was his experience of the day, if he had given *the mixture* in these cases he thought that they would have said he had had a good result. It struck him that anæsthesia with nitrous oxide only, was not so short as Dr. Hewitt stated, it would unquestionably last for the removal of three teeth. With regard to children varying from 10 to 13, he believed he had in one morning ten of them, there was no phonation, no kicking, and the breathing was beautiful. Dr. Hewitt thought the recovery was not so good with the mixture as with nitrous oxide, if that were the case surely with the complication and other disadvantages *the mixture* was not so valuable. As to the length of time "going off," Dr. Hewitt very kindly gave him (Mr. Bailey) gas on two occasions, and the last time he said "Shall I give you a mixture of oxygen ?" But he (Mr. Bailey) said "No, he would rather not as he took gas so very well." However, he was a long time getting under the influence of the gas. He thought the length of time getting under anæsthesia was a very serious objection, as it was very trying to the friends of the patient. When giving nitrous oxide it was his custom to count the alphabet, and he never got a struggle further than between G and H, if one could get a patient under the influence in nine seconds that seemed to be a good result, and it was the valuable thing in nitrous oxide, viz :—the shortness of time in which one got anæsthesia. He could not help thinking that Dr. Hewitt troubled himself unnecessarily about the change of colour. When nitrous oxide first began to be given, the the leading physicians, Gull, Jenner, and others, objected to it owing to the change of colour which it produced, but what happened? After they had seen it given for a little time they all said that there was no harm whatever in this symptom, and that Mr. Bailey thought was the general concensus of opinion. The jactitation was certainly a bad thing, but that would vary enormously. He had given gas to his own little child before she was 3 years old, and he had even given it to children only 1 year old. Again, he had given pure nitrous oxide to a lady of 96 and there had been no change of colour. Dr. Hewitt said that seventy-six of the cases were perfect, but if one took 153 cases of pure nitrous oxide he (Mr. Bailey) thought you would get as good a result. He had never given ether with dental students as he thought that they should learn to give nitrous oxide pure, and he believed he got quite as good a per centage as Dr. Hewitt with the mixture. With regard to the apparatus, it seemed to him to be all but perfect, but the question was if it was desirable to have so complicated an apparatus.

Mr. ROWELL said that it had been his privilege to assist Dr. Hewitt and he had also given the mixture on his own account. He could only say that he thoroughly concurred in all Dr. Hewitt's conclusions. He wished to call attention to one point—that of blood pressure; after putting a dog under the mixture there was no more change of blood pressure than if it had been given air alone Without going into details he would just mention one case which was quite enough to show that it was not deleterious. A German physiologist put a dog under it for 48 hours, and it woke up all right except that it was rather "off his feed." There was one point that he wished to emphasize, and that was the beautiful sleep-like condition, which was most marked with the mixture.

Mr. LLOYD did not agree with the previous speaker as to the advantages of the sleep-like condition, he thought it rather a disadvantage as it rendered difficult the detection of when the patient was fully under the influence of anæsthesia.

Mr. R. H. WOODHOUSE wished to say only just one word in justice to Dr. Hewitt, and that was to put on record the fact that most of Dr. Hewitt's operations were all done by students, and though they did their work with great care and did it very well, still they had not had the experience of dentists in practise. Again, if a student broke a tooth it was *his* fault, whereas if a qualified man did so it was the *tooth's* fault, so that this would tend to make them longer in their operation. He had had the opportunity of observing Dr. Hewitt's cases, and the condition had been splendid, it was only the after effects that he had any doubts about, he was not sure that there was not more headache.

Dr. Dudley Buxton said that he could not but feel that with the hand of the clock pointing to five minutes to eleven it would be impossible to discuss adequately the points of Dr. Hewitt's paper, and he would therefore content himself with offering him his congratulations upon his valuable contribution to the subject.

Dr. Silk wished also to add his congratulations to those of Dr. Buxton for the very able paper they had had the pleasure of listening to.

Mr. William Hern as one of Dr. Hewitt's colleagues desired to bear testimony to the very great care with which Dr. Hewitt had conducted his investigations, and to express his sense of the high scientific value of them, he also wished to add that he had been very much struck with the splendid effects upon children which the mixture produced from the point of view of the operator.

Mr. W. T. Trollope did not propose to occupy the time of the Society for more than a few minutes, but as he had been using the mixture of nitrous oxide and oxygen for the last eighteen months he should like to say that his experience had been entirely in accordance with Dr. Hewitt's; he had been using the apparatus that was first shown by Dr. Hewitt at Brighton from a telescopic gasometer, he certainly found the results most satisfactory, he got longer anæsthesia and no stertor, etc.

Dr. Hewitt in reply, said that it only remained for him to thank them very cordially for the discussion. With regard to Mr. Bailey's remarks, Mr. Woodhouse had answered in one way what Mr. Bailey was wishing to know, but Dr. Hewitt thought that the 2·7 was a very good average for students. Perhaps in private practice it was possible to get more teeth out, but it must be borne in mind that these statistics were compiled mainly from hospital work. Mr. Bailey said that there was very little change of colour, Dr. Hewett would not contradict this ; it was possible that one did not always recognise the change of colour, he usually got others to notice the lividity under nitrous oxide, and want of change of colour in oxygen cases. He should say no more on the subject, but he maintained that there was no change—or very much less—with the mixture than with nitrous oxide alone. Dr. Hewitt did not claim that the combination was best for all cases, but he looked upon it as a good alternative with nitrous oxide and better than it for many cases. Mr. Rowell had said that the dog was under the influence 48 hours, as a matter of fact he was kept under for 72 hours, and at the end of that time the only difference in him was that he was not quite so lively as before. Mr. Lloyd objected to the sleep-like condition, but the signs he (Dr. Hewitt) had referred to were reliable and tangible signs. The last speaker had very kindly referred to his administrations of nitrous oxide and oxygen, there were several dentists in the provincial towns who were using the mixture, and he (Dr. Hewitt) had received many letters from them. He had said very little about the actual safety of the mixture, but if it could be said that anything was safer than nitrous oxide he thought it might be said of nitrous oxide and oxygen.

The usual vote of thanks concluded the Meeting, and the Society adjourned until noon.

REVIEW.

"A MANUAL OF THE DENTAL LABORATORY: ITS CONSTRUCTION, MANAGEMENT, AND ECONOMY; THE VARIOUS IMPLEMENTS AND THEIR MANIPULATIONS; WITH LABORATORY NOTES AND SUGGESTIONS." BY CHARLES HUNTER, AUTHOR OF 'A TREATISE ON MECHANICAL DENTISTRY.' [BAILLIÈRE, TINDALL AND COX.]

THIS is a useful little manual. It does not pretend to deal *in extenso* with the subject of prosthetic dentistry. Its pages are mainly taken up with descriptions of the various appliances, to be found in a well ordered dental laboratory; but interspersed with these catalogue-like descriptions, there occur frequent hints and suggestions of real value on the details of mechanical work. The author is no mere theorist, his book clearly 'writes him down' as a man of large experience and sound common sense,—a combination of qualities more often desired than found in the writers of practical treatises. His great anxiety to be impartial, and to avoid dogmatic assertion, is rather apt to leave the reader in some perplexity as to which of two courses the writer really thinks the better; and a little more self assertion would have made the work more valuable, without making it aggressive. But on the other hand, the courteous tone in which the author treats of methods of practice not his own is attractive, if only from its rarity. It might be said with truth that mention is not made in this book of some of the most recent appliances, or, if made, the mention is a very bare one. But we have to set against this the fact, that the very honesty with which the writer admits his inacquaintance with certain kinds of work (continuous gum, for example) cannot but commend him as an authority to be trusted in the wide range of general practice, with which his long experience fully enables him to deal. We venture to say, that no dentist not wedded to a stereotyped method of work, —that is to say, no intelligent open-minded dentist—can fail to extract some items of useful information from Mr. Hunter's modest volume; and to the young practitioner, blissfully ignorant of the worries and perplexities that a busy practice and troublesome cases bring, the book is very well worth, not only reading, but buying. Let not the reader be dismayed by the first pages, with their touch of 'fad'—what good workman is there who has not his pet notions?—; he may indeed skip the first half of the book without much loss: in the second half—from page 70 onwards, he will find many a useful piece of advice, clearly and practically put, that will save him a vast amount of trouble, and many an hour of time.

Dental News.

Charing Cross Hospital Medical School.

THE presentation of the scholarships and prizes awarded during the summer and winter sessions, was made by Mr. J. Passmore Edwards on the 29th ult. at the Medical School, Chandos Street.

The DEAN (Mr. Stanley Boyd) read a highly interesting annual report. The extension of the school buildings—mentioned in Dr. Bruce's report for 1887—was not actually commenced until August, 1889, and owing to various difficulties the completion of the work was not effected until after the present session had begun. Now that it was finished, they had the satisfaction of knowing that their school building would compare favourably with any in London. The additional accommodation enabled them to suitably house their pathological and anatomical collections, and also to find comfortable quarters for the members of the student's club. The committee were anxious to see the club develop into a self-governing body, holding the premises as it were under a lease, and having the right to exclude undesirable members, so that the club would reflect the true tone of the school.

The five years' curriculum having come into operation with the beginning of the year, many changes and additions had been necessary to bring that curriculum within the requirements of the Conjoint Board, Biology, Insanity, Public Health, Practical Midwifery, and Ophthalmology had become compulsory subjects.

In electing Mr. Chalmers Mitchell and Dr. Hack Tuke respectively to the chairs of Biology and. Physiological Medicine, the Executive felt that they themselves were largely the gainers. Dr. Arkle had been appointed to the post of Pathologist and Curator. Mr. Shield had succeeded Mr. Morgan in the chair of Surgical Pathology. Dr. Whitelegge would continue to take charge of Public Health, while Dr. Routh would take the class of Practical Midwifery.

Another cause of extra work to the Committees of Medical Schools, had been the reference back to the Privy Council by the House of Commons of the Charter of the proposed Gresham University, and the appointment of the new Royal Commission to reconsider the Charter.

With reference to the students, there had been 84 new entries during the last year, made up of 45 general, 28 dental, and 11 occasional students, showing that the steady increase which the Executive had been able to report from year to year was still maintained. There had been a daily average attendance of about 240, a clear evidence that the standard of work was rising, that a large number of the students were aiming at something more than mere qualification.

List of Awards.—Llewellyn Scholarship (Certificate and £25) Mr. G. H. Hooper; Golding Scholarship (Certificate and £15) Mr. D P. Gabell; Governors' Clinical Gold Medal, Mr. S. L. J. Steggall; The Pereira Prize (Certificate and £5) Mr. E. Brown; Anatomy, Senior (Prize) Mr. W. C. D. Hills; Anatomy, Junior (Prize) Mr. F. H. Atkinson; Physiology, Senior (Prize) Mr. G. B. Clarke; Physiology, Junior (Prize) Mr. D. C. Rees; Practical Physiology (Certificate) Mr. D. P. Gabell; Chemistry (Prize) Mr. J. R. Langley; Practical Chemistry (Prize) Mr. D. P. Gabell; Osteology (Prize) Mr. G. L. Austen; Medicine (Prize) Mr. N. R. J. Rainier; Practical Medicine (Prize) Mr. W. T. White; Surgery (Prize) Mr. W. J. Robertson; Therapeutics (Prize) Mr. V. P. Foote; Materia Medica (Prize) Mr. G. B. Clarke; Midwifery (Prize) Mr. P. J. Probyn; Forensic Medicine and Toxicology (Prize) Mr. W. T. White; Pathology (Prize) Mr. H. H. Phillips; Public Health

(Prize) Mr. H. H. Woods ; Dental Surgery (First Prize, Certificate and £6 6s.) Mr. H. J. Stevens ; Second Prize (Certificate and £4 4s.), Mr. E. W. Harwood ; (Certificates), Mr. J. W. Tomlinson and Mr. F. T. Trott.

Mr. Passmore Edwards having distributed the awards, addressed the students and company. After alluding with satisfaction to the excellent report which the Dean had been able to make evincing the progress and prosperity of the School, he dwelt with pleasure upon the hearty good feeling which existed between students and staff as exhibited by the applause with which the names of the latter were received. The same warm applause bestowed upon the prize-winners seemed to indicate an absence of jealousy which was very pleasant. He was very glad to hear from their Dean that athletics were so well taken up ; it was only by the due and proportionate development of brain and muscle that mental and moral healthfulness could be obtained ; so long as English youths continued to be manly our supremacy in the world would never be questioned. Charing Cross Hospital was rather happily situated. It was the centre of London ; London was the centre of the British Empire ; and the British Empire was the centre of civilized mankind. Charing Cross also had the advantage of being within 200 or 300 yards of more accidents than perhaps happened anywhere else in the world. In conclusion he expressed the great pleasure it afforded him to be present, and he hoped to have many opportunities of renewing his acquaintance with the Institution.

Sir Joseph Fayrer in a few well chosen sentences moved a vote of thanks to Mr. Passmore Edwards for presiding, and referred to his munificence and wise liberality. He had heard only within the last 24 hours that Mr. Edwards had set aside a considerable part of what he hoped was a large fortune, in founding and endowing a convalescent home in connection with the hospital. Sir Joseph Fayrer did not know of any wiser or better directed benevolence than the foundation of these convalescent homes, affording a place of rest and recuperation to those poor patients and sufferers who were not able to provide the means from their own funds He could only express his grateful thanks to Mr. Edwards on behalf of the hospital for his kindness and generosity as exemplified in this gift and in many other ways during the past.

Mr. Passmore Edwards speaking with some emotion, gratefully acknowledged the vote, but desired to say that he did not feel at all entitled to so much thanks.

The Dean on behalf of Mr. Edwards, who was too much overcome to state it for himself, added that the bequest was made in remembrance of Mr. Edwards mother.

The meeting then terminated.

GOSSIP.

Golden Wedding.—Mr. and Mrs. Joseph King, of York, celebrated their golden wedding under very happy circumstances a few days ago. Rarely is it granted to husband and wife to pass fifty years together without having to mourn some loss, to remember some vacant chair, but not only are Mr. and Mrs. King able to rejoice in an unbroken family, but, more remarkable still, all five sons and four daughters had the pleasure of being present and participating in the celebration. Mr. King, we are glad to say, enjoys very good health having regard to his age (84), his mind is still active, but his sight is almost gone. He first went to York in 1832 as Dental Assistant to Mr. Horner whom he afterwards joined in partnership. Mr. Horner died in 1839 and Mr. King continued to practice alone until 1880, when his son, Mr. Thomas Edward King, L.D.S. Eng., succeeded him. Mr. King has also another son in the profession, Mr. Arthur King, L.D.S.Eng., practising at Guildford.

The Distribution of Prizes of the Dental Hospital of London will take place at Princes Hall, on Wednesday, July 13th, at 8.30. Professor St. George Mivart, F.R.S., will preside. The evening will conclude with music and recitations, and we understand that the evening will be very pleasant and entertaining.

The introductory address in the Faculty of Medicine of University College, London, will be delivered by Mr. S. J. Huchinson, on October 4th, 1892.

We are desired by the Dental Manufacturing Company to say that their last issue of Shares has been fully subscribed. Intending buyers should apply to the Company's Brokers, who will inform them if there are any Shares on the Market.

APPOINTMENTS.

A. A Matthews, L.D.S., has been appointed Honorary Dental Surgeon to the Bradford Infirmary.

VACANCIES.

Victoria Dental Hospital of Manchester, Grosvenor Street, All Saints. The post of Demonstrator of Operative Dentistry is vacant Applications to be made to the Dean.

THE DENTAL RECORD, LONDON: JULY 1, 1892.

DENTAL SURGERY IN THE ARMY AND NAVY.

THE executive authorities at the Admiralty and the Horse Guards are nothing if they are not conservative. It would appear that after the strenuous efforts on the part of those who to whose honour, be it said, have fought for proper dental attention for our soldiers and sailors, the powers that be have decided something must be done. There was no doubt what should be done, and the British Dental Association were, we believe, quite clear as to how the reform could and should be effected, but the Admiralty naturally felt their knowledge of the dental necessities of their blue jackets and how to satisfy them was more accurate and far more practical than that of men who devoted their lives to such questions! Who could doubt that? It has been decided to appoint naval surgeons who have received instruction in Dentistry to districts or depots, and it is to be their duty to look after the teeth of the men, both bluejackets and marines, as well as of the boys on the training ships. All this is to be superadded to the ordinary duties of these gentlemen. Further, a naval surgeon holding a dental diploma has also been appointed to Haslar Hospital, whose duties will, it is stated, include the care of some 5,000 mouths, of which at least 1,200 will belong to lads in training ships. This gentleman will further be required to give instructions in dentistry to the naval surgeons at Haslar! One can hardly conceive such an absurd state of affairs, nor does there appear any excuse or justification for so palpable a bungle. It is no secret that the authorities sought advice from some eminent members of our profession who were precise enough in the counsel they gave, and practical enough in the plan they suggested, yet in the face of all this the "Department" wraps itself once more in red tape, and promulgates an arrangement which seems to us to be little short of fantastic, in that no men however zealous could ever grapple with the labours which are to be set them to do. It is not only matter of supreme regret that the men and boys should be left without sufficient aid in their dental troubles, but it is a thousand pities that the experiment now being tried should prove a failure simply because the conditions—which render its successful inception and carrying out a possibility—are denied to it. We can only hope that the pressure which has been sufficient to move the authorities as far as the present concession will be still further exercised and will eventually bring about a more rational basis upon which to work out the experiment of how are we to maintain in health the teeth of our lads in training—of our soldiers and sailors.

AN "ALL NIGHT" MEETING OF THE ODONTOLOGICAL SOCIETY.

A MEETING prolonged to 11 p.m. may be termed an "all night" meeting, when the routine of years has decided that "dentists in debate" should turn off their eloquence at 9.30. The last meeting of the society was certainly a conspicuously interesting one, as a report appearing in our columns will show; but we should have thought that its *materiel* had been more wisely husbanded if it had been divided into two. Still, the enthusiasm of the hour said otherwise, and, —although many of those who left the meeting almost at the moment they voted for its prolongation,—those who remained felt their patience was rewarded, even if, as the moments sped by, that feeling was mixed with one of gratitude when speaker after speaker pleaded the lateness of the hour as an excuse for not entering into any discussion. Of course, exception may always be taken, but perhaps it was not altogether an unnatural sentiment which found utterance after the meeting—a sentiment of not unmixed approval—that strangers to the society, who did not offer any very novel views, should have prevented several of the members from giving personal experiences of the use of the mixture of nitrous oxide and oxygen. That the subject was ably brought forward and placed in the most favourable light, none could gainsay, but that any attempt was made or could indeed have been made to thresh the matter out from the stand-point of comparison was equally certain. Mr. Smith Turner's communication upon the dentition of the Guanches and its curious revelations of the dental diseases of a primitive race exterminated some four-hundred years ago was of singular interest and it is certainly a matter of regret that that gentleman had not elaborated his casual into a more formal communication. Ezekiel's dead bones could hardly have taken shape more readily than could those poor mortal remains of the luckless Guanches have clothed themselves and have told us of conditions of life, the stress and storm, the rudeness, the absence of civilisation's tendencies towards physical degeneration. Much of all this Mr. Smith Turner might have elicited, had time been permitted him, and we venture to think his communication would have proved even more interesting had the exigencies of the meeting allowed him to expand and enlarge his remarks. The communication as it stands is one of quite exceptional interest and value.

THE ROUND ROBIN from some of the Guy's students which the Journal of the British Medical Association saw fit to publish has elicited some pretty sharp rejoinders both in the journal named above and in that of the British Dental Association, the editor of which says :—

"The grievances of the plucked student—his wrongs and his merits, the injustice, caprice and malice of examiners—are familiar to us all. Who does not remember a time when he half believed, if he did not actually utter, fearful accusations against those monsters who, destitute of every moral sense, sit wreaking revenge on youths they have never seen or heard of before, and torturing and smothering too out-spoken genius without remorse. While all this was only foolish chatter of boys whose vanity was sadly hurt and who tried desperately hard to explain away unpalatable and humiliating facts, we have all smiled and sympathised, but who can sympathise with such things in print? We are sorry and ashamed that dental students should have actually published a letter of such a character as appeared in the *British Medical Journal* of last week; it matters not what school they belong to, all dental students must share in the disgrace, and the rest of the medical student world have a just cause for laughing at us. It is a great pity that some graver head was not at hand to advise the students, for though the episode has its funny side, it has its sad side also."

All must regret, and we venture to think that none more than the true friends of the Guy's School, the unmannerly outburst of the students who prefer rushing into print in a medical periodical to the legitimate appeal to their own Hospital authorities, who at an institution like Guy's need no aid from journalistic sources. Unthinking zeal for one's teachers, which not too seldom cloaks but does not hide one's self-seeking, places the teachers in an invidious position such as no member of the Guy's staff, we are sure, would for one moment like to find himself.

OBITUARY.

It is our sad duty to report the death of Mr. Felix Weiss, one of the oldest and most esteemed members of our profession, and one of our own literary supporters. Mr. Felix Weiss, the subject of our notice, was born at Liverpool on July 25th, 1822, his father being an Alsacian, and his mother a close relative of the celebrated John Hunter. Rheumatic fever having attacked him at a very early age, leaving a chronic tract behind, young Weiss found scientific literature his great recreation. He became on intimate terms with most of the scientific men of the North, and he tells us of having been present at the lecture where the then phenomenal experiment of being able to deflect the magnetic needle at a mile's distance of wire was made. He lingered about the Liverpool Infirmary and witnessed with pain the operations performed before anæsthetics were discovered. His father, a distinguished musical amateur, and his son, the late Mr. W. H. Weiss, vocalist, or perhaps now known as the composer of the song "The Village Blacksmith," together brought about many musical gatherings of some merit, and in them one Yaniewicz, a dentist by profession but an exquisite violinist in private, his first introduction to Dental Surgery was made. He served his articles and in due time started practice. The climate of Liverpool proved unfavourable to the rheumatic temperament, and in 1843 he determined to settle in London. In the middle of the fifties the rumours of systematic dental education come about, and on his introduction to Mr. Rymer and others, he pushed his energies in the direction of the extermination of the charlatan and the elevation of the Dental calling. We find his pen busy in the first volume of the *Dental Review* published in 1859, and the thirty years which have since elapsed have borne evidence that the same spirit existed. On the introduction of vulcanite he made many valuable experiments which are recorded in the journals. Physical infirmity prevented him from developing microscopic research, but from clear and judicious observation he was able to deduce facts which to the present day have been left undisputed. The College of Dentists claiming, as it should, the first honor of having produced systematically trained dentists, opened the field for further development. The subsequent formation of the Odontological Society and the dissolution of the former body and the granting of the L.D.S. diploma by the College of Surgeons evoked again the energies of Mr. Weiss. He viewed with disgust the favour the public showed towards the charlatan, and he wondered how it could be reached by the real truth. Having written several works of fiction he conceived the idea that by making his hero one of this abominable class he might do some good, and thus it was that Vernon Galbray was published. The truth of his arguments was proved by the numerous threats of actions at law he received from some of these individuals; he had hit them hard and they wanted their revenge. A series of articles on "Passing Events" published in the British Journal of Dental Science under the *non de plume* of "Phosphor," from 1879 gave him the opportunity for severe though just criticism on many things which were taking place in dental circles. The Odontological Society honoured him by electing him to its Council, its Librarian for ten years, its Vice-President and finally its President. Had it not been for cardiac complications he would have continued to take part in debate, and it was a matter of much regret to him he did not render more service to the British Dental Association when it honoured him by electing him Vice-President of the Representative Board, but his physical condition imposed upon him the necessity of avoiding undue excitement. We need not here refer to his contributions to dental science, for whilst they were many he made his path that of dental ethics and education rather than scientific research. He enjoyed the confidence of all the members of the profession, from him they felt they could obtain an opinion founded upon an honest and unselfish judgment, a qualification not always to be met with in men in public life. His death resulted from cardiac failure. In private life Mr. Weiss was esteemed by all who crossed his path, his kindly genial way endearing him and making his personality most attractive.

Mr. George Benjamin Pearman, L.D.S., whose death we have to announce with much regret, was born in Chelsea on the 7th August, 1846, he was apprenticed pupil to the late Mr. Ollive, and subsequently to Mr. P. Smith, of Chelsea. After the completion of his pupillage, he became assistant to Mr. Bullen, of Chester, with whom he remained till 1873, when he returned to London to take up the hospital curriculum. He became a student of the Dental Hospital, Leicester Square, and of the Middlesex Hospital, and took his qualification in 1875, since which date till 1891 he practised in partnership with Mr. F. Youngman, at Torquay. In 1891 Mr. Pearman retired from his profession. In May last it was necessary for him to submit to a serious operation for hydronephrosis, from the effects of which he succumbed on the morning of the following day.

Mr. Alexander Fothergill, L.D.S., whose death occurred on May 27th, had only just retired from the presidency of the Midland Counties Branch of the British Dental Association. He was the son of John Fothergill, one of the earliest railway surgeons. After leaving school he became a pupil of his brother, Mr. William Fothergill, dentist, of Northgate, with whom he subsequently became a partner, the partnership continuing over a period of forty-five years.

Mr. Fothergill joined the movement for a College of Dentists, and subsequently the Odontological Society, qualifying in 1868. He has always taken a keen interest in the progress of the profession. has been a member of the British Dental Association since its formation, and only retired from active practice during last year. At the time of his death he was in his sixty-ninth year.

Selections.

"DIAGNOSIS AND TREATMENT OF EMPYEMA OF THE ANTRUM."

According to Dr. Morgenthau (*Dental Review*) the first and second molar teeth usually project into the floor of the cavity; and often they and other teeth penetrate into the cavity itself. As the disease involves the deeper layers of the naturally thin mucous membrane which acts as periosteum, caries of the teeth can result. Thus, it is seen, diseased teeth may not be the cause, but even the result of empyema. This explanation must appear very plausible, *a priori*, when the etiology is considered. While authors disagree as to the relative importance of nasal and dental troubles in the causation of empyema, there is no doubt that both kinds of factors can and do exert a pernicious influence. These are brought about by nasal diseases. Zuckerkandl has shown that the nasal and antral cavities are so intimately connected that even a slight diseased condition of one is followed often by injection of the mucous membrane of the other. The huge number of nasal catarrhs, especially in our exacting climate, must lead us to expect many antral troubles. Hypertrophic rhinitis can easily produce stenosis of the natural opening of the maxillary sinus; nasal polypi, which so often originate from the middle turbinated body, may occlude the same opening. The air now completely enclosed within the cavity, is shut off from the atmosphere, and cannot be renewed. It is absorbed by the blood vessels, causing passive hyperæmia and catarrhal hypersecretion. The mucous membrane, under normal conditions, does not secrete more than can be removed either by evaporation or absorption by the lymphatic system. Catarrhal secretion in a closed cavity, says Bosworth, gives rise sooner or later to suppuration.

The discharge may be from one or both of the nasal fossæ; continued or intermittent, dependent on the position of the patient or—more accurately—of the natural opening into the middle meatus of the nose; accompanied, or not, by a fetid odor which may be perceptible to the patient only; causing an insipid or disagreeable taste in the patient's mouth, depriving him of appetite; escaping through the anterior or posterior nares. Unilateral flow of pus from the nose is of the greatest value, because its other causes (syphilis, neoplasms, foreign bodies) could be diagnosed by an expert. When, however, inspection and treatment of the nose (clearing the normal opening by the removing of polypi and hypertrophies, by pushing the turbinated body away from it with a probe, etc.) are unsuccessful, then other means of diagnosis must be adopted Hartmann's method of injecting fluid through the natural opening still holds good as a diagnostic aid. Trans-illumination is used in Berlin to confirm a diagnosis. The room must be completely darkened, and the lips firmly closed over the handle of the electric lamp. The instrument itself must be small and yet powerful. I use one which is fed by a storage battery of six volts. The cheek beneath the eye usually appears equally illuminated on both sides. When one antrum is filled with pus the corresponding portion of the cheek is darker than on the other side. The finer details cannot, of course, be described in this paper, but will soon be appreciated after a number of trials on normal and sick individuals.

When neither inspection of the nose nor trans-illumination lead to a positive diagnosis while the subjective symptoms are present, then we muat have recourse to the third and most reliable diagnostic aid, the exploratory puncture. When we are dealing with cases in which the teeth are not affected, the antro-nasal wall should be cocainized. A large syringe (on the style of those commonly used for hypodermatic medication) with a strong curved needle is thrust through the wall, as far back in the lower nasal meatus as is possible. By aspiration fluid can be drawn from the antral cavity. The appearance of only a few drops of pus clears the diagnosis.

The operations to relieve the trouble now in favour with most rhino-laryngologists—are made from three different anatomical parts ; the lower meatus of the nose, the facial wall of the antrum, and the alveolar border of the superior maxillary bone. Besides, perforating the antro-nasal wall from the middle nasal meatus was suggested so long ago as the last century, and recently advocated by Zuckerkandl. But the same objections must be made against it as against Hartmann's less painful method. The opening would be in the upper part of the cavity instead of being at the most dependent portion. There would be no counter opening, nor world it be possible to investigate the cavity by eye or probe—essential points which will receive due consideration.

The two methods to which I would draw attention are urged by Krause and by Kuester, They obviate the necessity of removing a healthy tooth and enable the use of the "dry" treatment. It is maintained that repeated injections are a continued source of irritation to the mucous membrane. On opening the cavity, it is flushed with some warm solution of an antiseptic. Not a few ounces are injected ? but the medicated fluid is introduced through the artificial perforation, and allowed to escape through the natural opening till the cavity is well cleansed, *i.e.*, till the water runs clear and pure from the nose. Then the remaining fluid is driven out and the cavity dried by blowing air through the cavity. A Davidson syringe is very handy for producing a continuous stream, the force of which can be regulated with nicety, and for supplying the current of air. After the lining of the sinus is thus carefully prepared, powder can be applied to it directly. Iodoform is the most reliable, but if the patient objects to the odour, or fear of intoxication renders caution necessary, it can be replaced by iodol, aristol, boric acid, pyoktannin, or sulphonal. It is gratifying to see inveterate cases yield to this treatment. Only when pus again appears in the middle meatus will it become necessary to repeat the injection of fluids.

In Professor Krause's throat clinic in Berlin empyema is treated in the following manner. The lower part of the nose is well cocainized (10 per cent.) to lesson the pain, and to obtain as much room as possible. A curved trocar of the size of a lead pencil is introduced into the lower meatus until it becomes necessary to crowd the cartilaginous septum to one side. The point of the trocar being thus carried to where the antral and nasal cavities are separated by only a thin bony wall, it is thrust through it. The stilet is withdrawn ; and through the canula to which rubber tubing is attached, the antiseptic solution, and then the powder is thrown into the antral cavity. The next day no or very little pus appears in the middle meatus. The first washing out will usually suffice. The insufflations require the use of the canula. It is guarded by a well-rounded, snugly fitting conductor, and introduced in precisely the same manner as the first time, in order to find the artificial opening. This is only too much inclined to close, as there is no actual loss of tissue. The flap serves, however, as a protection against the entrance of mucous, etc., from the nasal cavity.

Powder should be blown into the cavity generously every second day or less, always according to the appearance of pus. It is not at all necessary, namely, that the cavity be filled with pus to cause it to ooze through the natural opening. I have seen the mucous membrane of the sinus, both intra vitam and postmortem. swelled to 10-15 times its normal thickness. Thus, if but a few drops of pus are formed they can with ease emerge from the hiatus semilunaris ; the œdematous swelling bringing them near it, and nearly obliterating the lumen of the cavity. Krause cured patients permanently within two weeks. But there are undoubtedly cases which are combated for years by various medicaments, with remissions and exacerbations. The persistence of suppuration must be ascribed to some obstruction or permanent irritation. It is well known how frequently ridges and bridges extend from one wall of the sinus to another, dividing the cavity into compartments, which in turn may not communicate with each other. While we are calling upon every new antiseptic in the vain hope that it may stop the process at last, we may be treating a lower division of the antrum which is not diseased, the guilty upper or outer chamber being out of our reach. The disease itself can, in the course of time, lead to the formation of new bone. The spiculæ can be the cause of constant irritation, or the suppuration may be kept up by a supernumerary tooth. In a word, the diseased part is best examined to its whole extent by the surgeon.

With this object in view, Kuester makes an opening in the facial wall of the antrum large enough to admit the little finger. He can thus explore, by palpation or by probing, all sides and nooks of the cavity, break down adhesions, ridges and septa ; remove irritating bodies, or, possibly a sequestrum ; and, lastly, if ocular inspection and palpation prove it desirable, use the sharp spoon more or less vigorously on the diseased mucous membrane. Kuester states that microbes are not only in the fluid contents, but also in the walls of the cavity. Suppuration persists as long as the microbes exist in it. Furthermore, pus remaining in one of the pockets becomes stagnant and irritant. For these reasons his operation is a radical one. After cocainizing the gum of the upper jaw he makes a flap of both mucous membrane and periosteum, the base above extending from the root of the first præmolar to that of the first molar tooth on the affected side. The periosteum is pushed away carefully, and the flap capped and held back by an assistant. With hammer and chisel the bone is removed to the desired extent. The little finger then explores the whole cavity, on its important mission. The cavity is flushed, the medication solution traversing the cavity and leaving it by the natural opening ; then it is packed with iodoform gauze. Suppuration usually is reduced to a few drops within twenty-four hours. After few a days a thin drainage tube, fastened by a thread to keep it from disappearing within the cavity, prevents the flap from uniting too soon. Kuester is also in favour of not repeating the flushing. When only mucus is secreted, the mucous membranes may be stimulated by a weak solution of nitrate of silver. He prefers to leave a little fistula which he can close any time by touching the margin with a cautery. A small plate will hold the tube in place, and guard against the entrance of particles of food.

Finally, the old operation of extracting a tooth and penetrating through the alveolus is now modified by flushing the cavity but once, and then employing powder instead of injections. The results are better than formerly.

That the process frequently cannot be stopped, however, must again be explained by the supposition that irritation is kept up in one of the ways described. It seems desirable in most cases to explore the cavity. Kuester's radical measures will, therefore, meet with the approval of many. In obstinate cases which cannot be relieved by milder means, Kuester's method must be adopted. It complies with all the demands which the most exacting surgeon might make ;

(1) The artificial opening is at the most dependent part.

(2) The injected fluid enters and leaves by different openings, traversing and cleaning the cavity before the powder is applied. The medicated solution can be removed, and the lining membrane dried.

(3) We are enabled to submit the entire field of operation to a searching examination ; to detect and take away obstruction, foreign bodies, etc.

(4) Direct action of both instruments and medicaments upon the diseased membrane can be insured and watched.

Often Krause's treatment will be of avail. Dentists, above all, will appreciate its applicability where a sound tooth is at stake.

PENTAL.

An Article, by Dr. A. Hägler, Assistant General Polyclinic, Basel, in the *Schweizerische Vierteljahrsschrift für Zahnheilkunde*, vol. ii., No. 1, 1892, is translated for and inserted in the *Dental Cosmos* of June. Trimethyl-ethylene, obtained from amylenehydrate heated with acids, and called pental by Professor V. Mering, we have tested in about forty cases, on the recommendation of Professor Hollaender in *Therapeutischen Monatsheften*. Our supply came from the laboratory of C. A. Kahlbaum, Berlin.

The anæsthetic was, like bromide of ethyl, employed only for short operations, such as extraction of teeth, etc. The inhaler we employed consisted of a double mask covered with "impermeable," and supplied with an additional layer of cotton. An opening on the top of the inhaler, which may be closed at will, permits any desired prolongation of the narcotic state without removing the mask.

Narcosis was induced in a sitting as well as in a horizontal position, after all tight clothing had been loosened. In cases of children, five cubic centimeters and in those of adults ten cubic centimeters of pental was poured on the mask, which was then firmly held to the patient's face, leaving the eyes unobstructed. My observations concerning narcosis by means of pental, which, I am sorry to say, do not always agree with those of Dr. Hollaender, are as follows:

Narcosis makes its appearance slowly and usually quietly. The eyes, closed at first, open, the pupils dilate, and the eyes assume a staring expression.

I have often been able to observe a state of excitation in the beginning of the narcosis, which Dr. Hollaender mentions only in the rarest cases, and then in a slight form. In one case, that of a very excitable, anæmic girl (removal of a tubercular metacarpal bone), the excitation lasted during the whole narcotic period, the patient of course being in entire ignorance of the fact. In nearly all cases a slight hyperemia of the facial skin could be observed, which began with gradual heating of forehead and cheeks.

The time required for the production of a complete state of narcosis varies much, one-half to two minutes being required.

A fair representation of the condition of a patient fully under the influence of pental is the following:

The arms hang down in a lethargic state; the eyes are wide open and staring, the pupils are dilated, and in most cases the corneal reflexes are still active. The senses also, do not seem to quite disappear, as many patients revive upon energetic commands from the operator.

I have never noticed salivation in cases of pental narcosis, which has often been observed when bromide of ethyl is used, and which is very undesirable, especially in extractions. The duration of the narcotic state fluctuated, with our method of application, between three and seven minutes. I have no experience concerning longer periods.

The revival from the effects of this anæsthetic is quite rapid. The patient is almost invariably in the best of humor, and I remember but one case where a woman awoke, laboring for quite a while under physical depression, caused, she averred by unpleasant dreams.

Unpleasant after-effects, such as headache, sick stomach, &c., have so far not been noted, and have not been observed by us. Complete ignorance of the operation and its details reigns after a thorough application.

I am sorry that I cannot agree with Dr. Hollaender as to the entire safety of pental, as I was compelled to witness a very unpleasant incident. To demonstrate pental narcosis to some colleagues, I selected a healthy student as the subject. I applied the narcotic to the amount of ten cubic centimeters in a sitting posture, having first opened the shirt and loosened the waistband of the patient. After some deprecatory motions with the arms, cyanosis ensued slightly. In about ninety seconds the arms hung down listlessly, the eyes were staring wide open, the pupils dilated, the corneal reflexes still observable, and the pulse regular and strong. The narcosis was then discontinued. At this moment a constantly-increasing dyspnœa set in, with intense cyanosis, which grew stronger despite the fact that the tongue was pulled fully out. The patient was laid on the floor, his appearance being cyanotic, and his face turgid; the pulse was not perceptible. Artificial respiration was at once resorted to, inducing natural respiration in about two minutes, and in one or two minutes afterward the patient was able to rise from the floor without much assistance. The experiment had no detrimental after-effects, and the patient could resume his duties as assistant of the chirurgical polyclinic a few minutes later.

Journalistic Memorabilia.

The Population of the World.

In estimating the total number of human beings existent upon the globe, one country has always presented a grave stumbling block. The Chinese form so enormous a portion of humanity that an erroneous assumption as to their numbers increases the possible error to a startling extent. This is singularly illustrated if we compare the figures accepted as approximately accurate in 1880 with those given in 1891. In the first named year the Chinese Empire was credited with 405,000,000 souls, while in 1882, painstaking investigations had reduced these figures to 350,000,000 or 55,000,000 less. The estimate for the whole Empire now, is 361,500,000. It must be added that, while these figures are the result of much patient research, and the comparison of an immense number of more or less reliable authorities, they cannot be deemed other than approximate. In other words, even at the present date we cannot be sure of the population of the world to within fifty millions at the very lowest estimate. We may, however, in passing observe that even if the Chinese constitute, as the above figures would imply, one-fourth of the human race, they may some day have to be reckoned with as a political factor vastly different from their present status. "History repeats itself"—sometimes ; and the race whom Genghis Khan led to the plunder and temporary conquest of the West may yet again threaten—if it does not overcome—its present teachers in the arts of war.

The total population of the world in 1891, including the figures for China stated above is shown in the following table :—

	Square Miles.	Population.	To 1 Square. mile.
Europe (1)	3,756,860	357,379,000	94
Asia (2)	17,530,686	825,954,000	47
Africa (3)	11,277,364	163,953,000	14
America (4)... ...	14,801,402	121,713,000	8
Australia (5) ...	2,991,442	3,230,000	1
Oceanic Islands...	733,120	7,420,000	10
Polar Regions ...	1,730,810	80,400	—
Total	52,821,684	1,479,729,400	

(1) Without Iceland, Nova Zembla, Atlantic Islands, &c. (2) Without Arctic Islands. (3) Without Madagascar, &c. (4) Without Arctic Regions. (5) The Continent and Tasmania.

In 1880 the estimate was 1,401 millions, accurate, or approximately accurate, returns being only 44 per cent. of the total. Of the figures given in the above table, the compilers estimate that about 57 per cent. of the returns are fairly precise. As will be seen, the alleged increase in eleven years is a little short of 79 millions. As regards the proportion of inhabitants to area, the *Bevolkerung* gives some highly interesting statistics. Belgium stands at the head of all other countries, having 530 persons to the square mile.

Holland comes next with 365, and Great Britain follows with 312, England alone, however, having 479. Scotland shows about 120, and Ireland 160. Finland and Norway show the least population in proportion to space of all European countries, having only sixteen to each square mile. Taking Europe in its widest sense, and including its Polar Islands, the total area is given at 4,092,000 square miles, while Asia comes close to 17,200,000. Of this, Asiatic Russia occupies no less than 6,510,800. Persia we note is credited with 7,653,000 inhabitants, occupying 635,165 square miles ; Arabia with 3,472,000 inhabitants in 1,153,430 square miles ; and the very recently opened country of Corea—absolutely and entirely unknown to Europeans a third of a century ago—is giving as boasting ten and a half millions of people.

It was very recently remarked by a geographical authority, that Africa bid fair to become vastly better known as regarded its territories and peoples, than its Asiatic sister, despite the fact that the latter was the cradle of Western civilization. It is therefore somewhat curious to note that there is no estimates of area or population for either the Niger protectorate or the sphere of the British East African Company's influence. The total area south of the equator is given as 3,540,740 square miles, with a population of 3,800,000 only. The entire population of the Continent is put down at 164 millions, but this in view of the widely different estimates of other writers, ranging from 220 to 127 millions, is like the estimate for Eastern Asia, but scientific guesswork.—*Discovery.*

NEW METHOD OF PURIFYING GUTTA-PERCHA.

THAT most useful little paper *Discovery* says, M. Alexander Grammont, Pont de Cherui, Isere, France, writes :— "Up to the present the purification of gutta-percha has been performed mechanically all the operations necessary being long and costly, and, in spite of care and time given to the process, it is difficult to obtain an absolutely pure product.

The improved method which forms the subject of this invention consists broadly in dissolving the raw gutta percha in a suitable solvent, and treating it to successive purifications while in solution. This refining process consists of three principal operations, which take place substantially in an automatic manner in the apparatus used for this process, and which also forms part of this invention.

These three operations are—first, the extraction of matters foreign to the ordinary composition of the gutta-percha, such as earthy matter, sand, wood, water; secondly, the extraction and separation of the oxidized gutta-percha, giving product No. 1; and thirdly, the extraction and separation of the resinous matters contained in product No. 1, and also in product No. 2, being the residue that remains after extracting product No. 1.

The method is carried out as follows: The gutta-percha to be treated is triturated to reduce it to small fragments and placed in an iron or wooden receiver, in which are movable pallets or mixing devices. Bisulphide of carbon is then allowed to flow into this receiver from a tank placed on a high level. The agitator or mixer is then moved to stir together, the bisulphide of carbon and the crude gutta-percha until the soluble matter therein is all dissolved

A cock at the base of the receiver is then opened and the solution passes into a filter, which retains the solid matters not dissolved in the bisulphide of carbon, which foreign matters are thus separated from the gutta-percha. The solution passes into a series of depositing vessels; in these vessels the the oxidized gutta-percha separates gradually from the pure gutta-percha by reason of a difference in density. The pure gutta-percha is drawn off into a lower vessel, in which the bisulphide of carbon is evaporated, leaving only pure gutta-percha, containing, however, still some resinous matter.

The vapour of the bisulphide of carbon is carried off and condensed in a worm and returned to its storage tank to be used again for dissolving crude gutta-percha. Two products are thus obtained, one being oxidized gutta-percha containing resin, the other non-oxidized gutta-percha also containing resin.

Before treatment to remove the resin, the oxidized gutta-percha requires to be deoxidized, which may be done by passing carbonic oxide gas into the vessel containing the solution of oxidized gutta-percha. The carbonic oxide gas removes the oxygen, being converted to carbonic dioxide or carbonic acid gas. The resulting deoxidized gutta-percha may be mixed with the non-oxidized gutta-percha, or these two products may be treated separately for removal of the resin according to the quality of the ultimate product required.

To remove the resin, an apparatus is used similar to that employed for the first part of this process, or even the same apparatus may be used, if desired. Instead, however, of using bisulphide of carbon as a solvent, benzine, or essence of terebentine, or any other essential oil which dissolves resin, is used.

The solution is made in the mixer as before, passes through the filter into the depositing vessels, where the resin separates from the gutta-percha, so that by simply drawing off at proper levels, the two products are separated. The gutta-percha solution is carried to the evaporator, where the solvent is evaporated, to be re-condensed for use again, and the pure gutta-percha is left in the apparatus. The oxidized gutta-percha after deoxidation is treated in the same manner, and forms a product of secondary quality.

A New Oxyphosphate for Crown Setting.

Dr. W. B. Ames, writing in the *Ohio Journal of Dental Science*, says: Of the various oxyphosphates offered for sale, I am of the opinion, after examining a considerable number of them, that oxide of zinc is the basis and cement ingredient, other materials such as silica, alumina, or magnesia in combination acting only as modifiers of the plasticity before setting and the hardness after setting and do not enter into the crystals. After an extensive series of carefully recorded experiments, I have arrived at the conclusion that a very limited number of the metallic oxides have the property of forming a cement in combination with phosphoric acid and water. The oxides of zinc, copper and mercury only have this property, according to my experiments. The salts of mercury being so very potent for evil, as well as good, render the oxides of this metal undesirable as ingredients of cements to be used in the mouth, so that the only practical addition that I have been able to make through my experiments to the cement family is the higher oxide of copper. Of copper oxides we have the cuprous or red, and the cupric or black. The red cuprous oxide of copper forms a cement with phosphoric acid and water, that has good working qualities, but shrinks badly in setting, lacks strength, and becomes friable with crystallization. The black cuprous oxide of copper forms with phosphoric acid and water, in proper proportions, a cement which has desirable working qualities, and a hardness and stability after crystallization which give promise of its being a valuable addition to our list of materials for use in filling cavities and the attachments of crowns and bridges. The most valuable property is the ability to use a large proportion of oxide in the mixture without hurrying the crystallization of the mass. With an unusually large proportion of oxide the crystallization is sufficiently slow to allow of thorough mixing and deliberate handling while filling a cavity or setting a crown or bridge. It is peculiar in that it retains its plasticity for an unusually long time upon a cold gloss slab, but crystallizes rapidly under the effects of the warmth of the body. While it gives plenty of time for manipulation, it hardens rapidly after the process has once commenced, and is harder in a few minutes after being placed in the mouth than is usual with oxyphosphates of zinc. The crystallization of this cement, when the proper proportion of ingredients has been used, seems to be more perfect than any of the zinc oxide cements that I have ever seen. There is a flintly-like hardness such as I have never met with in any other oxyphosphate.

If a pure oxide is used, free of metallic copper, there is no staining of the tooth material from impregnation. If metallic copper be present there is a gradual discoloration similar to that from impregnation of the tooth material from some amalgams.

There is undoubtedly a powerful antiseptic influence exerted by the cement while in the plastic state, as there is a small amount of phosphate of copper formed during the mixing, which is soluble in the free phosphoric acid of the plastic cement, but insoluble in the saliva after the crystallization has taken place; while the cement is hardening there is a distinct copper salt taste, which disappears when the crystallization is complete. This is analogous to the astringent acid taste from fresh oxyphosphate of zinc fillings, which comes from the phosphate of zinc formed in the combination.

Hot phosphoric acid will dissolve a considerable amount of the metallic oxides, and a small amount is always dissolved in the cold state. The practical application of this is, that the use of oxide of the metal whose salts are highly antiseptic, insures a considerable antiseptic influence from the cement.

Inasmuch as phosphoric acid attacks the more electro-positive metals readily, it is naturally suggested that we should be careful about using an unplated steel spatula in the mixing of oxyphosphates. If the phosphoric acid solution contains the proper proportion of water for best crystallization with the oxide used, this proportion may be modified to a detrimental extent by the combination of a portion of the acid with the metal of the spatula. A spatula of some of the more negative metals, or a steel spatula plated with negative metal is a more sensible instrument to use than one of steel only. The ivory spatula I would not consider as preferable to steel, but one that might in this connection be practicable, but for many reasons is inferior to thoroughly plated steel.

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Original Communications.

DENTISTRY AT THE GENERAL HOSPITALS.

By W. H. DOLAMORE, M.R.C.S., L.R.C.P., L.D.S.

THE influence of teeth both as aids to health and, when in a diseased condition, as primary and secondary causes of ill-health is now-a-days sufficiently recognised, at any rate, by those competent to pass an opinion on the matter. If outward proof of this assertion be needed it would suffice to point to the appointment of dental surgeons not only to all our General Hospitals and Dispensaries, but also to many of our Special Hospitals and to not a few of those Medical Homes and Charities, which are so widely spread over our country, and which, in so many ways, meet and anticipate the wants of our poorer folk. This need of attention to the teeth is, happily, not now confined to treatment of those which are diseased, but is largely of a preventative nature. The number of children, who now crowd the Dental Department of our General Hospitals, is worthy of note, indicating, as as it does, that the endeavours to impress on the public the need of attention to the teeth during childhood is meeting with some success. But this very success brings with it a difficulty. If treatment of diseased teeth is reserved for those which are wholly bad; if patients are not expected to present themselves at our General Hospital Dental Department till the teeth are so bad that their extraction is, if not absolutely, at any rate fairly and honestly indicated, then the present system will suffice to meet the needs of the poorer public. But directly something higher is needed directly an attempt is made to preserve the teeth by any of those conservative measures which we have at our disposal, we are at once met by such an overwhelming amount of work that we are wholly unable, under the present system, to cope with it.

What then is to be done? Shall we, on the one hand, continue the old system, let things slide, shut our eyes to calls for, and the possibility of doing something better? Or, on the the other hand, shall we devise some new system and develop our outpatient departments into something higher and better than they have hitherto been?

In a dental journal and among dental men there is not the slightest doubt on which of these two alternatives the choice would fall. Put them to the vote and the second would be at once adopted. So far, so good. It is easy enough to vote and urge the reorganisation of our dental out-patient departments, but it is quite another matter to actually carry the matter through. We are between Scylla and Charybdis. It may be easy enough to escape Scylla, the present unhappy state of affairs, but we do so only to fall into Charybdis, the whirlpool of difficulties surrounding any attempt at such a radical change as would be called for to produce some permanent improvement.

This question is no new one. It has for a long time occupied the minds of those holding appointments at General Hospitals. The inadequateness of the present system has been freely recognised by these, as freely as it has been criticised by those holding no such posts, but what to do and how to do it seem as far off as ever. Nor does the present paper aim at pointing out any royal road to a new and better system, it desires simply to bring the matter forward, to open a discussion which may in time lead to the adoption of some workable plan; and it should be clearly understood that any ideas thrown out are mooted in the most tentative way to be adopted or recast as may seem best.

After thinking over the question, the difficulties surrounding this subject appear to arise from three main causes. First a supineness towards the need of such an improved department on the part of the ruling authorities at our general hospitals. Secondly, a lack of time on the part of the dental surgeons, and thirdly, ignorance among the poorer members of our population of the benefits derived from due attention to the teeth.

Whatever be the plan which may ultimately be adopted to improve the condition of affairs not only must the tacit consent of the governors of our general hospitals be obtained, but we must have their active co-operation. Depending as our hospitals so largely do on voluntary support, the question of ways and means is bound always to arise when some extensive alteration is proposed, and we cannot ignore the fact, that these institutions are primarily concerned with diseases either directly threatening life or involving, if not cured, permanent injury to the patient. Certainly no one would contend that these graver evils should in any way be neglected. But, without entering into the wide question of the relationship of dentistry to medicine and surgery, it must surely be apparent that very grave ill-effects do follow on neglect of the teeth, so that whatever funds were available would be well laid out in meeting this want. But it would be well at once to recognize that such a department would involve not only a certain initial outlay, but would be an annual charge on the hospital funds. A charge, however, which I am convinced would be productive of much good to the poor; hence it seems a need which may fairly and legitimately be urged upon the governors of our hospitals, and one, so supported by arguments in its favour, as to leave hope that by a little agitation consent might be gained to the adoption of an improved system.

Our second difficulty, the lack of time on the part of the dental surgeon, is again incident to our system of charity. If this official were a paid official, in the same way that the staff of continental hospitals are paid, the difficulty would to a certain extent disappear. We may be far from echoing the opinion given by an eminent surgeon before the recent Royal Commission on Hospitals, that the money loss, to the holder of such appointments, in time given to hospital work must be reckoned as so many thousands a year, yet we must opine that there is a limit to that which a man can afford to give gratuitously to hospital work. This is true for either a surgeon or a physician, and far more so for the dentist, whose private practice is far less dependent, than either of the two former, on a hospital connection. Any new development of our out-patient dental department must, therefore, take this factor into consideration, and provide in some way or other for further and every material assistance being forthcoming.

Our last difficulty, that of ignorance on the part of the poor, is one which doubtless time and education in these matters will tend to remove. But for the present, the indifference to the value of teeth is woefully manifest to anyone who endeavours to try conservative treatment in dealing with caries of teeth. It has been said, that the success in educating the public to the need of care in children's teeth is one of the elements in the cry for improvements in these departments, and undoubtedly this is so to a certain extent, but unfortunately the advance is very limited, and though mothers may be very anxious, and rightly so, that irregularities in position of the teeth should be prevented or corrected, adults are by no means so eager either to preserve their teeth by thorough cleanliness or to avail themselves of aid to check the advance of caries till some complication has arisen and rendered the case far more lengthy and difficult to treat. Nor for the most part do they realise what it means to lose their teeth, especially the back ones, which of all others, are those most concerned in mastication, and so of keeping unimpaired the digestive system, that corner stone of health. Far too often will it fall to one, who may endeavour to save these teeth, to find the patient not only not grateful for the aid, but often prone to complain in an injured tone that he or she would far rather have the tooth out. Annoying as this type of patient may be, he should, however, hardly influence us in treating of this matter. Should conservative treatment become more general there is hardly a likelihood of any lack of patients, indeed, the difficulty will be to cope with them. It is this number, I might almost say excess, of patients which renders the state of affairs here without a parallel in the United States, where, undoubtedly, not only is attention to the teeth more general, but where there is no such overwhelming multitude of poor people. It is this number which adds so greatly to the difficulty of hospital work in all the departments of medicine and surgery. Indeed, when hospitals specially devoted to dentistry, with their students all rendering valuable aid—when these find a difficulty in dealing with the number of patients, what must we expect to be the case in the out-patient departments we have been considering, where the labour is so strictly limited. Undoubtedly any such department would have to be exceedingly careful that it was not abused. The question of the prevention of hospital abuse is so wide a one that it is impossible to do more than mention it. It is, however, very satisfactory to find the report of the before-mentioned commission stating that the evidence before them tended to show that the out-patient department was not abused to any serious extent, and and indeed we are, probably, most of us of opinion that this is to a very large extent true of our general hospitals. Personally I am inclined to think that special hospitals are the greater sinners in this respect. It is of course an exceedingly difficult matter to deal with, and it is almost impossible to draw any hard and fast lines as to who are or are not fit persons to be attended gratuitously at our hospitals. Take domestic servants, which some specially, as I think wrongly, state are fit persons to attend the hospital; these are often in receipt of good wages, have actually no living expenses, and in many cases are far better able to pay for dental and medical help than those holding a somewhat higher social position. Difficult as the subject is, it is one which must be fairly grappled with, for it would be intolerable that such a department, as we are considering, should in any way interfere with those practitioners who fairly and honestly carry on their practices amongst the poorer members of the community, and indeed, if a rigid care be not exercised in this direction the departments would soon be clogged by the demands upon it. Such departments should be for the poor and the poor only, even hospital nurses and students would, in my opinion, be better excluded as patients during the hours at which the public are admitted.

The work done, or at any rate called for, in these dental departments comprise extractions with and without anæsthetics, the regulation of children's teeth by mechanical and other means, the filling of teeth, treatment of fractures of the jaws and restorations of lost parts following operations or injuries, and sundry other smaller matters which we need not consider, nor will we for the moment take the question of supply of artificial dentures. The two chief points in which most departments fail are in the regulation of teeth and in filling. It is at once apparent that these are the two items in our daily work which consume the most time. And our chief difficulty in dealing with the question really at once resolves itself into a question of time, the utter impossibility of any unpaid official devoting anything like sufficient time even to make the slightest attempt to add filling to one of the recognised details of our dental out-patient departments.

Extractions with and without gas, treatment of fractured jaws by splints, and those comparatively rare cases of restoration following extensive surgical operations may be, and are fairly met by the present system; the attendance of a Dental Surgeon, associated, in the larger hospitals, with an Assistant-Dental Surgeon amply suffices for these. Nor can I see that treatment of malplaced teeth by mechanical means should cause any difficulty provided the hospital authorities can be brought to see the need for, and advantages arising out of, such treatment. Surely such plates fall under the same category as do other surgical appliances which are now supplied either through the Surgical Aid Society; or the poor box, or directly out of the funds of the hospital. Provided sufficient funds were forthcoming to pay the actual cost of the manufacture of the plates there would be no great difficulty in finding time to undertake such cases. That the patients should contribute something, according to their means, would be eminently desirable, for the chances of their appreciating the efforts made, and so of ultimate success, would be considerably enhanced. Whether hospital boards can be brought to see the advantages derived from such a course the writer leaves to those more conversant with these than he, but that the patients are as much benefitted by the correction of such irregularities as they would be by correction of many of the other deformities to which our bodies are liable can scarcely be doubted.

But the chief difficulty revolves around the pivot of treatment of decayed teeth; no slight modification of existing arrangements could meet this want. If the matter is to be undertaken it appears to the writer that it may be met in one of two ways. First, the simplest and most obvious course would be to provide sufficient accommodation and labour in the out-patient departments themselves. But no tinkering with the matter would in any way suffice. It would not, of course, be necessary to make extensive arrangements at once, but to be successful it must be started in such a way and on such a scale as to be capable of development as the need arose. The initial and yearly expenditure would have to be adequate, for it would be impossible to carry on the work in other than a suitable room devoted to this purpose entirely, and with suitable fittings. Whether the patients should contribute anything towards the cost of the materials used on them is a question which rather concerns the financial policy of the hospital than the merits or demerits of the scheme. Granted, however, that so far all is provided that is required, we next meet the question, Who shall do the work? Now, it seems that no voluntary effort would be adequate to sustain the work of such a department, and it would be necessary to have some junior, though qualified man, who should take charge of such a department under the supervision of the Dental Surgeons. Such a post, whatever be the name which we attach to it, would be of considerable value to any man who had just passed the hospitals. He should hold the appointment for a certain time, say six months, and should receive a sufficient honorarium to enable him to devote a considerable part of each dav to the work of the hospital. Elaborate work could, of course, not be undertaken, but a department even on this limited scale, would amply suffice to meet in a common sense and practical way the present needs, and at those hospitals with medical schools attached in which Dental Students attend, no doubt good assistance could be rendered by these.

The idea for the second plan would be found in that desire for co-operation so strongly expressed in the report of the Royal Commission on hospitals already referred to. Dental interests did not find any witness before this Commission and, indeed, the matters with which it was chiefly concerned were not of primary importance to us. Already in an informal way patients are often referred from the out-patient departments of general hospitals to the dental hospitals when more extensive work is required than can be undertaken at the former. Working under this idea, it would be desirable to substitute a regular system for the present irregular reference which depends largely on the personal connection with both institutions on the part of the referee. If any such idea could be carried out to any great extent affairs would have to be regulated by a joint committee of the various hospitals. Undoubtedly a great obstacle in the way of such a closer intimacy is the dependence of most hospitals on voluntary charity ; each hospital, fighting, as it were, for its very existence, can scarcely afford to relieve another of part of its burdens unless it received a *quid pro quo*. Here is another objection to our present voluntary system. A central authority ruling over all would very probably check individual effort on the part of each hospital and so tend somewhat to impede its growth, but it certainly would give a unity to the purpose of all.

If we take these two ideas and set them side by side we find that the former, the development of existing departments, would be more applicable to our larger hospitals, and the latter, the co-operation with the dental hospitals would be more so to the numerous smaller ones and to the special hospitals. But even with such a dental department as we have sketched, there would doubtless be some work which could be better carried out at our dental hospitals and to these it should be referred.

Leaving the question from the point of view of placing efficient dental help within the grasp of the poor, look at the question from an educational standpoint. In such special departments we have the germs of dental schools. Is their development desirable or not? The needs of the poor are that aid should be spread over the whole metropolis, that it should be brought to their doors, but the need of the student is that teaching shall be concentrated within narrow limits, that as little time as possible may be wasted in moving from one teaching centre to another. Nor would teaching be likely to benefit as much from a number of dental schools as from the growth of one. Indeed by a system of co-operation much valuable clinical matter, which is now wasted by filtration through so many hospitals, would be made of intense practical value. It is the complaint of dental students that at our general hospitals they are so seldom able to see cases of diseases of the jaws and contiguous parts, that they often pass through their whole career without feeling adequately instructed on these points. There is really no reason why this should be so, if cases which occur could be collected together. Why should not this be done? If dental hospitals relieved general hospitals of their dental patients who cannot be adequately treated in the latter,—why should not dental schools benefit by a series of lectures given year by year by different hospital surgeons, lectures illustrated by cases collected from the whole metropolis? At the present time and with no organized system such a collection of cases would require considerable labour, but there is not the slightest reason why it should be so if all will but work together for the common weal. If a course of lectures are to be given on a certain subject, say cancer of the tongue, there can be no earthly reason why cases should not be sent to that hospital, without waiting for a special request from the lecturer. Hence it would seem that our second scheme, that of co-operation, would confer more benefit on the student, but on the other hand the appointments to such a developed dental out-patient department as has been sketched would be such a grand source of post-graduate study, that from the educational standpoint one would like to see these also instituted. Hence it would seem that both from the standpoint of the student, and from one taking in view the needs of the poor, both schemes present advantages; and that probably the best result would be obtained by effecting a compromise, taking what is good in each and trying to hit the happy mean.

Here I would leave the question, hoping that those who have ideas on the matter, will not hesitate to contribute them to the common fund. For I am convinced the need is very urgent. Nothing can be more pitiable than to see those who needs must toil and slave to scrape together a bare existence, handicapped from the start by bodily ills which slowly but surely undermine their health, and yet which, if taken early and treated competently, need never have passed beyond the limits of a passing worry.

ABSTRACT OF AN ADDRESS GIVEN TO THE STUDENTS OF THE DENTAL HOSPITAL OF LONDON.

By Professor St. George Mivart, F.R.S.

Professor Mivart said he rose with mixed feelings of gratification and uneasiness. Gratification at the honour done him, for it was pleasurable to one whose career was drawing to its close to welcome young men who, by the distinctions they had already obtained, gave promise that they would efficiently advance the cause of science in days which their welcomer could not hope to see. Uneasiness, when he reflected that he was destitute of any special knowledge of such matters as pertained to their profession. His own work had mainly had to do with the study of zoology and physiology, neither of which subjects seemed altogether suitable for the occasion. He could no doubt amuse them with descriptions of the dental structure of certain animals. They would he thought be interested by a detailed account of the beautiful adaptations, to a fell purpose, which were to be found in the jaws and poison-fangs of the viper or the rattlesnake. They would be hardly less so, perhaps, if he depicted the mechanism whereby some serpents that fed on eggs avoid the loss of nourishment which would ensue did they break such eggs within their lipless mouths, instead of far down in their alimentary canal by the aid of an altogether peculiar set, of what are practically teeth, which are there developed. He might describe the marvellous and significant agreement which existed between the teeth of an African Anteater and a sort of skate-fish. He might direct their attention to certain other fishes which might be said to be clothed externally with teeth from head to tail. On the other hand he might point out how nature had furnished the ostrich, and many other birds, with artificial teeth in the form of stones swallowed and retained in the stomach (gizzard), where they effectually serve that grinding action which teeth generally perform. In direct contrast with this, he might ask them to admire the condition of happy crocodiles, which need no dentist's aid, new teeth arising in them again and again to replace such as may have been accidentally destroyed or lost. Were such a condition theirs, however, the utility of a dental hospital would be much diminished.

But the teeth of animals, however interesting to the zoologist and physiologist, could have but little concern for them that evening. It had been suggested that he should address them on a subject which he had treated recently. "Why tastes differ? what are we to think of the Good, the Beautiful, and the True?" The suggestion reminded him that when he was a lad his private tutor used after the morning lessons to leave a paper with questions for afternoon study, and one day on opening the paper he (Professor Mivart) read to his dismay "Analyze your ideas of Time and Space." These themes however excellent were much too spacious for the time at disposal, nevertheless in a certain familiar sense, Time and Space, the Beautiful, the True, and the Good, had all their practical relations with the Dental Hospital and Dental School of London. First as to the relation of the dentist's art to time: one might care very little for time in the abstract, but when that limited portion of it which was included in a life was considered, most would wish to stretch and prolong it to its utmost. Now, it might be said without hesitation that the lives of multitudes of mankind had been shortened by impaired nutrition resulting from dental misfortune and neglect, and not only had they been shortened, but rendered less happy and of less value. To the question "Is life worth living?" a reply had been given "It depends on the liver." But the condition of "the liver"—whether was meant by that term the organ so called, or the individual who lives—depended very much on that same art with which the Dental Hospital is concerned. Next, as to the relations which exist between the Hospital and those lofty abstract ideals, "the Beautiful, the True, and the Good." Its relation with Beauty, as ordinarily understood, was obvious, but there were other beauties, such as the beauty of harmony and of purity, to which the dentist's art ministered in ways which it required more than an ordinary acquaintance with Nature accurately to appreciate. Not only that which came out of the mouth but also that which went into the mouth might be a potent cause of evil to man. The poison-fang of the viper, already alluded to, was indeed an admirably contrived apparatus for injecting its deadly secretion into the body of its victim, yet that secretion was but its saliva, and it would no doubt surprise many present to be told that of them also it might be said "the poison of asps is under their lips," for it had been proved conclusively that the human saliva, when injected under an animal's skin, might be and is a very powerful poison. This, however, was by no means the only evil that lurked in the mouths of men, and (alas that it should have to be said) also in women. No doubt all present had heard of bacteria—those mysterious living micro-organisms which do so much for good and evil in the world, though their action had only recently been revealed by science. They were well nigh ubiquitous, and, apply the tooth-brush as one might, such creatures would hold their own and would invade the recesses of the most pearly and beautifully shaped teeth. Most notable perhaps amongst them was the deadly pneumococcus, which when, under certain conditions at least, it had found its way down into the lungs, gave origin to that most serious disorder pneumonia. A similarly entitled organism of a much higher structure which entered the mouth was known as the echinococcus, a creature which appeared to cause the death of every seventh person who died in Iceland. The echinococcus came forth from a most minute egg, laid in multitudes, by one of the several species of tapeworm which infest the dog. Ladies who possessed pet animals of that kind little knew the risk they ran in permitting the caresses they sometimes allowed, such an evil, however, was easily prevented in England. But with regard to the minute organisms which habitually infest the mouth, it was to them, and to them exclusively, that caries, in other words the decay of the teeth, was due. This had been abundantly proved by Professor Miller of Berlin. Many persons feel at first a certain repugnance to those artificial aids wherewith the dentist's art can furnish them, and yet when so furnished they easily attain a beauty and purity which must remain out of their reach so long as they are merely provided with the aids supplied by Nature.

The subject of Beauty led naturally to that of Truth in connection with the work of the School and Hospital. Truth consists in the accurate correspondence of the mind with things as they really are, in other words, truth might be said to be a conformity between thought and things external, the more exact this comformity, this adjustment, the greater the approach to truth. In ordinary life one rarely met with examples of a more perfect adjustment of the kind than that produced through the wonderful correspondence attained between the mental concepts formed by an accomplished dental surgeon, and that portion of the external world which came within the compass of those dexterous fingers which carried out his mind's behests.

And next, as to Goodness, he would not now attempt to enter upon the question which concerned the ultimate unanalyzable character of that idea, though such a character he believed it to possess. It was very much easier to talk about goodness than to practise it, but it was certain that the term was properly and reasonably employed in a much wider sense than that given it by the absolute moralist when affirming his position. One spoke even of what was "good" to eat, and some knew that a temporary want of food might produce irritability; good conduct, again, was closely connected with good feeling, but good feeling was exceptionally difficult for those who were undergoing dental torment, and amiability was apt to be sadly impaired by dyspepsia. It was clear then that the members of such an Institution as the Dental Hosital ministered directly to "goodness," as well as to "Beauty and Truth."

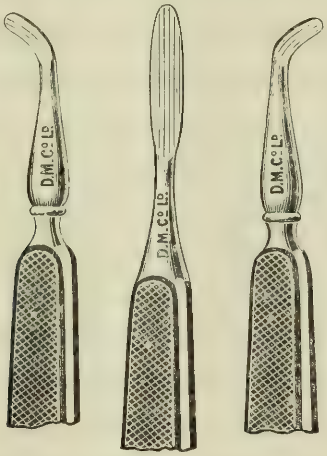
Finally, just a few words on the history of dentistry. The art was no doubt one of great antiquity, for from Herodotus one learnt that amongst the ancient Egyptians dentistry was a separate branch of medicine and surgery and was practised by specialists. A tooth-extracting instrument was preserved in the Temple of Apollo at Delphi, and Hippocrates made careful observations on the teeth both in their healthy and diseased conditions, and he spoke of the use of gold wire in fastening. After Celsus (32 B.C.) and Galen (131 A.D.) there were few prominent names known until the modern period was approached. But John Arculanus was said (by Professor Sheff of Vienna) to have been the only known man of his age (A.D. 1484) who filled teeth with gold foil. That celebrated surgeon of Henry III. of France, Ambrose Paré (1582) greatly advanced dental science, and a drawing of his extant, showed artificial teeth fixed in the mouth. To Ambrose Paré especial honour was due, as it was he who introduced the tying of arteries after amputation instead of applying hot iron. It was a very remarkable thing that this distinguished man attributed the decay of teeth (caries) to the action of small living organisms. A reference to the history and development of dentistry from the commencement of the century to the present time brought the Professors's address to a close.

THE USE OF THE ELEVATOR IN EXTRACTION.

By Ernest C. Davids, L.D.S.Eng.

One of the most useful instruments which the dentist possesses for the extraction of lower molars is the elevator, principally from the fact that where the back teeth are badly decayed and the roots divided, it is next to impossible in many cases to extract them by means of the forceps.

The elevators now generally used are of three kinds, the straight and the right and left curved, figs. 1, 2, 3.



The length from blade to end of handle should be about $5\frac{1}{2}$ inches, the old-fashioned serrated bone handles are preferable on account of the better purchase obtainable, the blades should be thoroughly sharpened before using, and in choosing curved elevators, the length of blade should not be too long, and according to Coleman: "The blade should be thin, about $\frac{1}{5}$th of an inch in breadth (though smaller sizes would be serviceable) flat or but slightly concave on its anterior surface, and convexly rounded on its posterior surface, and from the latter to the former bevelled off, and sharpened to a V-shaped point, the anterior surface may with advantage be finely grooved in its long axis, the posterior quite smooth, and the extremity kept quite sharp."

In operating, the elevator becomes a lever of the first order, in which the tooth to be extracted is the weight, either the next tooth or the thumb and forefinger of the left hand the fulcrum, and the operator the power.

In explaining its use, take for example a wisdom of the right lower, the operator having taken his position behind and above the patient, the forefinger of the left hand is passed back in the sulcus between the tooth and cheek, whilst the thumb is placed on the lingual side of the tooth, the remaining fingers are used for supporting the lower jaw outside and beneath the chin to avoid dislocation.

The handle of the elevator having been well grasped in the palm of the right hand, the forefinger is placed low down on the blade within a quarter of an inch of the tooth to be extracted or sometimes resting on the adjacent tooth, so that should any slip occur the instrument is well under control, and laceration of the tongue or mouth is obviated, the blade of the straight or curved elevator is then thrust down between the alveoli of the two teeth, this is to be accompanied by a digging movement in order to obtain a good hold of the root, the handle of the elevator is then depressed, and at the same time rotated slightly, by this means the tooth is raised from its socket, and the completion of the operation is performed by means of forceps. On the left lower the operation is a little more difficult, as the instrument is not quite so thoroughly under control, the first and second fingers of the left hand are used in this case for the protection of the tongue and cheek, whilst the thumb is placed under the chin for support, the operator standing in front of the patient.

On account of the direction of force the curved elevator seems much preferable to the straight in any case, from the fact that the point of the blade in the straight is always used in an oblique direction.

It very often happens that either the anterior or posterior root of tooth is badly decayed beneath the gum, while the other root is fairly firm, in this case it is advisable to commence the extraction by means of the stump forceps, removing the firm root, afterwards the curved elevator may be passed down into the alveolus and through the septum which divides the two roots, then by means of a quick rotation of the handle the remaining root can be dislodged.

The use of the elevator should be solely confined to the lower jaw and molars only, as it is not at all suited for the extraction of teeth anterior to first molar.

If used in the superior maxilla it may be attended with disastrous consequences, such as fracture of the whole side of alveolus, or if operating on the wisdom, the tuberosity, and with it perhaps the hamular process of internal Pterygoid muscle.

Dental News.

The Dental Hospital of London.

ONE of the pleasantest gatherings of the dental year took place on the 13th ulto., when the Prize distribution in the London School of Dental Surgery was also made the occasion, as heretofore, of a Conversazione. A brilliant and distinguished assemblage filled the spacious Galleries of the Royal Institute, Princes Hall, Piccadilly.

The DEAN (Mr. MORTON SMALE) read his report, in the course of which he referred with deep regret to the loss the hospital had sustained in the death of two old friends and supporters, Sir Risdon Bennett, the consulting physician, and Mr. Samuel Cartwright, the consulting dental surgeon. Able successors had been found in Sir Richard Quain and Mr. Thomas A. Rogers. After detailed allusions to the various changes in the Staff, the Dean dwelt with satisfaction on the success of the experiment of permitting stopping cases to be seen by appointment in the afternoon, a success which had encouraged them to throw the hospital open in the afternoon in all departments. The mechanical department likewise had proved an inestimable benefit both to patients and students. Some changes had been made in the method of deciding the award of the Saunders Scholarship, with a view to ensure its being obtained by the best all-round man. In commenting on the alteration of the curriculum for the conjoint diploma, the Dean expressed the belief that when the dental curriculum was first instituted, it was intended to extend over a period of five years, and that the reason some part of the pupilage and hospital training was allowed to run concurrently was in order that the time should not be longer than the period of study for the M.R.C.S. In his opinion, the present juncture afforded a good opportunity for extending the dental curriculum to five years. By so doing the mechanical work and hospital training would be separated, and all dental students would be placed on an equality, for the disadvantages would be removed which hitherto attached to those gentlemen who had been apprenticed in towns where dental hospitals and schools did not exist. In addition to the fairness all round that would be obtained, the dental profession would be placed in exactly the same relations to the medical profession as originally, and dental students would continue to enjoy the same opportunity of obtaining additional diplomas. This change could only come about, however, by the consent of the profession as a whole, and Mr. Morton Smale ventured to commend it to the consideration of those interested in dental education in the future.

The prizes were then distributed by Professor St. George Mivart, F.R.S.

The following is a list of the prize winners :—

Saunders Scholar	Mr. G. Northcroft.
2nd Prize, Certificate and £5, *(this year only)*	Mr. H. W. Trewby.
Ash's Prize. *(Given by Messrs. Ash & Sons)*	Mr. H. J. Stevens.

CLASS PRIZES, WINTER SESSION, 1891-1892.

DENTAL METALLURGY.

1st Prize	Mr. H. J. Stevens.
2nd Prize	Mr. C. S. Reed.
Certificates of Honour	Mr. H. W. Trewby. Mr. D. P. Gabell. Mr. G. Northcroft. Mr. S. Hayward. Mr. A. Curling-Hope.

DENTAL MECHANICS.

1st Prize	Mr. E. H. Harwood.
2nd Prizes	Mr. S. H. Hayward. Mr. E. Mosely.
Certificates of Honour	Mr. H. W. Trewby. Mr. R. S. Parris. Mr. J. G. Ranken.

OPERATING PRIZE.

1st Prize...	Mr. T. H. Clarence.
2nd Prize	Mr. G. Northcroft.
Certificates of Honour	Mr. A. H. Farebrother. Mr. J. T. Hankey.

CLASS PRIZES, SUMMER SESSION, 1892.

DENTAL ANATOMY.

1st Prize	Mr. H. W. Trewby.
2nd Prize	Mr. E. Mosely.
Certificates of Honour	Mr. D. P. Gabell. Mr. H. J. Stevens. Mr. G. Northcroft.

DENTAL SURGERY.

1st Prize	Mr. H. J. Stevens.
2nd Prize	Mr. F. Fouraker.
Certificates of Honour	Mr. J. W. Tomlinson. Mr. H. W. Trewby. Mr. E. Mosely. Mr. H. H. Ham. Mr. G. Northcroft. Mr. A. B. Densham.
Student's Society Prize	Mr. S. H. Hayward.

Having made the awards, Professor Mivart gave an interesting address. (See page 345.)

At the conclusion of Professor Mivart's address, Sir EDWIN SAUNDERS proposed the vote of thanks :—He felt confident of the approbation and support of those around him in expressing their hearty thanks to the learned Professor, Dr. St. Geo. Mivart for his kindness in acceding to the wish of the authorities in presiding, and also for the genial and gracious manner in which he had discharged that agreeable duty of prize distribution. He (Sir Edwin Saunders) was a great believer in the value of sunshine as regards human health, and he had an equally profound conviction of the value of moral sunshine, the sunshine of the heart, in all social relations and social functions, and therefore it was a great pleasure on occasions of this kind, which formed a sort of crisis in the lives of those who were the recipients of the awards, when the presentations were accompanied with courtesy and consideration—for it was not always so ; those who had had much experience in these matters, would remember many instances in which prizes had been handed over to the recipients in a stolid and perfunctory manner, without the slightest indication of personal regard. He (Sir Edwin Saunders) felt that he would be but ill discharging the duty entrusted to him if he did not express their special thanks for the address which they had had the privilege of listening to, full of learning, sage counsel, and happy suggestion ; also for the kind appreciation in their branch of the divine art of healing.

Professor Sir GEORGE MIVART briefly acknowledged the compliment.

A most excellent programme of music and recitations was provided for the entertainment of the visitors, the mere mention of the names of Mrs. Crow, Mr. Geo. Giddens, and Mr. Herbert Schartau as entertainers, being sufficient guarantee of amusement and enjoyment.

Guy's Hospital Medical School.

The 6th ult. being Prize Day at the above Institution a large gathering assembled to do honour to the occasion. The Wards (as far as practicable) Museums, School Buildings, College, and Chapel were thrown open from 3 till 5.30, and light refreshments accompanied with music were provided in the College Hall and grounds. The Rt. Rev. Dr. Randall Davidson, Bishop of Rochester, distributed the prizes at 3.30 in the quadrangle of the School. The

Governors and Staff of the Hospital were very fully represented on the dais.

The Dean of the School read the Report, in the course of which he alluded to the increased work necessitated by the change in the curriculum, and to the various distinctions gained by Guy's men during the year. Speaking of the additions which had recently been made to the fabric of the Hospital, he said that the new buildings adjoining Petersham House, which a year ago had not risen above their foundations, were now approaching completion. The block comprised a large and well-lighted chemical laboratory, a lecture room for about 100 students, a laboratory for experimental physics, a bacteriological laboratory, and very extensive accommodation rendered necessary by the rapid growth of the Dental School. Recreation had been further provided for by the acquisition of a nine-acre field close to Honor Oak Park Station ; 2 new five's courts had been erected, and plans for a pavilion had been submitted. The entries last October were fully up to the average, and in the examinations of the various qualifying boards, the success of the students had been most gratifying. It remained only to add that the most cordial relations continued to exist between the Governors, Medical Staff, and Students.

The following comprises a list of Prizemen of the Dental Department :—

PRIZES FOR FIRST YEAR'S DENTAL STUDENTS.

Prize £10	John Brodribb Parfitt, Reading.
Certificate	Charles Henry Oram, South Molton.
Certificate	George Sydney Frederick Manton, London.

PRIZES FOR SECOND YEAR'S DENTAL STUDENTS.

Prize £15	Richard Ernest Woodcock, Pontefract, Yorks.
Certificate	Samuel Ralph Apthorpe, Bromley, Kent.
Certificate	Archibald Rutlidge Henry, Hastings.

PRIZES FOR PRACTICAL DENTISTRY.

Prize £10	Stephen Keele, London.
Certificate	Archibald Rutlidge Henry, Hastings.
Certificate	Harold Arthur Turner, Eastbourne.

The Bishop of Rochester having distributed the prizes, delivered an eloquent address, of which want of space prevents more than a summary :—For one who was in no sense an expert in the sciences, the task of speaking before that assembly for even a few moments was an alarming one, but he was glad to be allowed an opportunity of expressing the interest which he felt—and all he was sure who had the welfare, he would not say of the metropolis, but the nation at large at heart, would share in the feeling—at the continued success of the Hospital as demonstrated by that animated gathering. He would like to add an expression of his own gratification and pride in joining the governing body of that time honoured Institution. All in South London were proud of Guy's Hospital, and rightly so, for they had not too many Institutions in this great region of suffering of which they could afford to be proud. It was those who, like himself, were daily working among the poor in their great cities, could best understand, and with significance tell, what was the difference made by these great benevolent institutions, indirectly to the community at large, and directly to those who lived in these crowded neighbourhoods. He supposed it was true to say that in our great cities our large hospitals had come to be so distinctly recognised a portion of the life of these cities that it would be difficult to imagine what would be the result if they were suddenly to cease to be. People had come to look upon them as so much a part of the natural order of things that it would be simply appalling to contemplate what would be the result if such an institution as Guy's Hospital were suddenly blotted out. It seemed to keep the balance of life in these regions, and the effect of its suddenly passing away would be something like the effect produced in the planetary world if some great orb were to drop out of the solar system. The very difficulty of contemplating such a possibility was a criterion of the value of these Institutions. While they had received no small measure of public support, he supposed there was no one who did not desire to see the gifts placed at the disposal of these institutions multiplied ten-fold, and indeed unless there was some multiplication of the gifts there would some day come a rude awakening. He for one should never fail to seize every opportunity of pressing upon everyone that they should bring their gifts in larger measure to the feet of those who had at their command such an apparatus for the alleviation of human suffering, and who had for a century and a half employed that apparatus so wisely. He supposed upon this occasion he was expected to say a few words rather upon the educational than the philanthropic value of hospitals and medical schools ; it was a hard thing to describe how it had come about, but there was an enormous helpfulness to a man's whole life to be brought up in such institutions as these ; to be the inheritors to the fame that had taken generations to build. The most skilled pathologist that even Guy's had produced would say that there was a great difference in the influence upon one's life of an institution whose reputation had taken centuries to build, compared with that of one which could only be remembered by decades. It was a strange and mysterious influence coming out of the past, and he would beg of the students more particularly to make the most of these grand opportunities, he was confident that upon nothing did men look back with more regret than the way in which they had missed getting the full benefit of the past ; it was very desirable that an effort should be made to feel the charm and get the good of these traditions while it was in their power to reap the advantages which they conferred. It was natural in any great stocktaking such as this to compare the work being done to-day with the means at their disposal in days long gone by. Nothing was stranger than to compare the facts of to-day with the facts of the past, whether they looked at law, at medicine, or the arts and sciences, but in no department was there anything like the same contrast between the apparatus of the past and present, either for learning or teaching, as in medical science and the medical world. Let them compare the schools of Padua and Bologna and their professors, with their cabalistic signs, magical words, and mysterious drugs—which formed so large a part of the stock-in-trade of the most thoughtful scientists of the past—with the method of teaching and research of the present day ; in no department of life was there so much that was new and so skilfully applied as in medical science. There was one other point : the intimate connection between the various parts of the human frame, the close association between the mental and the physical, was being recognised now in a way that it never had been before, that being so, how great was the responsibility of those who selected the medical profession as the field of their future career ; how necessary was it that they should not be merely skilled in their own particular science but that they should be in every sense true men, worthy of the trust and confidence that was being more and more reposed in them. In few places could they find better advantages for the preparation for so weighty a trust than were to be obtained at Guy's Hospital.

The Treasurer (Mr. Lushington) proposed a very cordial vote of thanks to the Bishop for his eloquent address, which was seconded by Dr. Pye Smith (senior physician) and Mr. Arthur Durham (senior surgeon.)

THE DENTAL RECORD, LONDON: AUG. 1, 1892.

"DENTISTS AND DENTISTRY AS SEEN BY THEIR PATIENTS."

P. LOUISA HALL has been relieving her soul before the universe at Vermont, and this lady has selected an excellent theme whereon to discourse. This lady supporting the tradition of the Rabbim would exact a tooth for a tooth, a filling for a filling, for says she "Did any one ever hear of a dentist having a tooth pulled? *Never*."

"It would be well," writes P. Louisa Hall, "if when the dental student had received his diploma, he should be obliged to undergo, at least one trial of inhaling ether, the attendant pleasure of having teeth extracted with a piece of the jaw bone attached; his most sensitive tooth bored out and filled; with the minor punches and scrapes which are thrown in; how many dentists would there be in the country?" asks this trenchant defender of suffering humanity's wrongs in the matter of dentists, but she, like doubting Pilate, waits for no answer but triumphantly adds, "not enough for a corporal's guard!" We do not know precisely how many warriors are required to protect one corporal, but we suppose not many, if so, what a real good time that dental corporal's guard would have! Still, probably P. Louisa Hall's suggestion is not a bad one, and many heavy-fisted operators might learn a lesson were their jaws handed over to the tender mercies of some dental friend equally severe in his manipulation. One little fact there is which may put heart of grace in the bosoms of the victims of bad operators, it is that we live in a free country, and if one dentist's ministrations are unduly ponderous, there exist many others of the same craft to whom the victim may hie him. There is no ownership in patients, as we are learning by sad experience, and the public when it cannot stand one professional man very soon goes elsewhere. We are told by this fair critic that few dentists are good mechanics, and that this deficiency in the dental world leads to ill fitting teeth, while these engender "corns." Alack and a-day! one has heard of separating the "debasing" (save the mark!) mechanical from the operating side of dentistry, and here is a lady who presumably knows what she is talking about, telling us the divorce has already in many cases taken place with a result neither satisfactory to the patient, nor creditable to the practitioner. We are glad to say that in England, at least, far more attention is paid tothe mechanical side of the training, and no one now-a-days blazes forth into the full effulgence of the L.D.S., without a decent practicalknowledge of dental mechanics.

THE PRIZE DISTRIBUTIONS AND CONVERSAZIONI.

We have had to report several gatherings of late, but none of a more successful character than the Conversazione given by the London School of Dental Surgery. It is a great comfort to have room wherein to move about, and that all had at the Institute of Painters. It is also a good thing to have spare space to which the inveterate talkers can betake themselves and converse to their hearts' content without spoiling the amusement of those who prefer to listen to the excellent programme, which on these occasions is always provided to the "high dilution" chat of the inveterate talker. The topical song on "Labby" was a success; we wonder whether "Henry" was there. Doubtless he would have as much enjoyed it as anyone present.

It is satisfactory to find the Guy's Dental Department is prospering, there is really room for so much good teaching in London, that all friends of the "gentle craft" would be glad to find all three schools going ahead, and by friendly rivalry, forcing up the standard of excellence all round.

We have received the first number of a new Dental Journal "*La Revue Internationale d'Odontologie*," published and edited by Professor Paul Dubois, ex-Director of the Odontologie and late President of the Odontological Society in Paris. His co-operators are a group of professors at the Ecole Dentaire de Paris and old contributors to the Odontologie. Messrs. Blocnan, Chauvin, Godon, Heidé, Papot, Prevel, Ronnet and Roy.

APPOINTMENT.

Mr. W. H. Dolamore, M.R.C.S., L.R.C.P., L.D.S., has been appointed Assistant Dental Surgeon to the Dental Hospital of London.

Selections.

AN ADDRESS ON TOOTH CULTURE.*

By Sir James Crichton-Browne, M.D., &c., Lord Chancellor's Visitor.

Gentlemen,—It is with unaffected diffidence and in compliance with the pressing solicitations of a valued if somewhat exacting friend that I occupy the chair this afternoon and presume to preside over a meeting of a body of men at whose feet I should sit for edification in the subjects that are to be considered here. But whatever I may lack in knowledge of the topics which are to engage your attention, I am not behind you in lively interest in them, for since I read the paper of Mr. J. Smith-Turner on the Condition of the Teeth of School Children, communicated to the Hygienic Congress in London, I have realised the importance of the inquiry which he described and have sought further information bearing on it. Some special investigations which I have myself undertaken from time to time into our present educational systems in their physiological aspects have prepared me for the disclosures which you are making, and I need scarcely say that I fully accept the conclusions arrived at in your first collective report and am in complete sympathy with you in the recommendations offered in that report and during the discussions of your Association which have taken place upon it. That report is, it seems to me, a very grave and significant document, revealing a state of matters for which even those most familiar with dental defects were scarcely prepared, for it is surely startling to find that amongst 5,249 children under twelve years of age, there were only 485 with normal or perfect dentures—that is to say, made up of sound teeth requiring neither filling nor extraction, that only 26 per cent. of infants at five years of age have teeth free from caries and that every 1,000 children at twelve years of age have amongst them 2,543 teeth affected by caries. Almost as startling as the report itself are some of the statements of independent observers by which it is supported, such as that of Dr. John Livey, who, after examining the teeth of 4,000 children attending schools in Bolton, said that during the course of this inquiry he could not help observing that caries is extremely common and that indeed it is quite the exception to find a perfect set of teeth, more especially in children over ten years of age; such as that of the dental officer to the Police Orphanage at Twickenham, who said that not more than one child in three enters the Orphanage with sound teeth; such as that of Mr. Fisher, of Dundee, who said that amongst 400 boys on the training ship *Mars* in the Firth of Tay, drawn from a part of the country where bone and muscle are of the best description, boys who are kept clean, well housed, clothed and dieted, he found only 80 sound sets of teeth; or such as that of Dr. Cunningham, that in a school at Hull there were 595 defective teeth for each 100 children. The fact that 10,000,000 of artificial teeth are used in this country annually, although, of course, only a small proportion of the population can procure these articles of luxury, brings home to us the truth that dental mortality is heavy in these days and that the gaps in dental circles that require filling must be big and numerous.

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* Delivered at the Annual Meeting of the Eastern Counties Branch of the British Dental Association at Cambridge, on June 22nd, 1892.

Putting aside for the present the important information you have supplied regarding other dental abnormalities and diseases found in school children, supernumerary teeth, honeycombed teeth, syphilitic teeth, fractured teeth, enamel defects and fistulæ, I wish to confine what I have to say this afternoon to caries, the most ruinous of dental maladies, not only in childhood, but at every epoch of life; and if in speaking of it I should utter what are to you truisms or travel over ground with which you have long been familiar, I must crave your kind indulgence, which I am sure you will extend to me when you remember that my acquaintance with the literature of your specialty is necessarily limited. Even the crudities and impertinencies of an outsider, however, are not without instruction to the expert, and from my stumbling steps you may perchance gather some hints to expedite your own advance.

Now, as regards dental caries, it can be scarcely necessary that I should rehearse to you the evidence that has been adduced to prove that it is now far more prevalent in this country than it has ever hitherto been, and that its ravages are more widespread and serious in the present than in any former generation, about the dental history of which we have records. You will probably agree with me that, that evidence is conclusive and, indeed, I take it that your own observations on the condition of the teeth of school children make it certain that dental degeneration has now attained an ascendency that it did not in former times possess. It is impossible to believe that the British Empire would have become what it is to day if amongst those hardy Norsemen who pushed up their keels upon the shore at Ebbsfleet and entered upon the making of England there had been only one sound set of teeth in every ten, or if amongst our ancestors, who have extended our dominions by land and sea and won for us our civil and religious liberties by struggles in which personal vigour and endurance counted for more than they do in the highly scientific and explosive warfare of modern times, there had been all but universal rottenness of the teeth before adolescence. Depend upon it that in the England of the past the teeth were not as frail or troublesome as they are to-day. The skulls dug up on the battle-fields of England grimly andsilently attest the fact, and the very existence of your profession in its present magnitude in the the country bears witness to it. I am not going to argue that sound teeth are the passports to power, or that biting and grinding capacity have determined the course of history, but this I will maintain, that no nation has ever climbed to pre-eminence on carious teeth, or can retain pre-eminence when its teeth are no more, and that it behoves a conquering people jealously to look to its teeth and to keep them, not less than its weapons, bright and sharp. If I might alter Goldsmith slightly I would declare

"Ill fares the land, to hastening ills a prey,
Where gums accumulate the teeth decay."

It is not an edentulous race that will finally possess the world.

When we inquire into the cause of the greatly increased prevalence of dental caries in modern times, we at once perceive that it is an instance of these imperfect adjustments which we often see in living beings in their passage from a natural to an artificial, and from an artificial to a more artificial condition of existence. All advance in organic evolution involves danger and sacrifice, and in highly complicated organisms an advance in one direction often means retrogression in another in which the power of adaptation is tardy, or where compensatory measures have not been adopted. The resources of civilisation are more ample, nimble and varied than those of dentition, and so it has come about that the teeth have not been modified in accordance with the altered habits of life of modern times, and especially of the nineteenth century, and have not yet been adequately protected by specially devised safeguards. But in examining into the causes of the increase of dental decay which we see around us, we can go beyond a mere general statement of this kind and indicate, I believe, some of the specific conditions of modern life which are mainly responsible for it ; and some of these specific conditions, as they present themselves to my mind, I venture, with great deference, to submit to your consideration.

In the first place, then, it seems to me that the greater prevalence of dental caries in these days is probably in some measure dependent on the softness and pulpiness of the food on which we for the most part feed. Hardness and toughness of food—and the food of savage and semi-civilised races is generally hard and tough—involve vigorous mastication and vigorous mastication involves a vigorous use of the teeth in their proper function and a copious flow of saliva involves cleansing of the teeth and gums, to which the active movements of the lips, tongue, and cheeks during mastication largely contribute. But softness and pulpiness of food—and the food of all civilised races tends to become more and more soft and pulpy —means comparatively little mastication and use of the teeth, and little mastication means a diminished flow of saliva, for the far-fetched condiments of refined cookery do not stimulate the salivary glands to anything like the same extent that ordinary sapid substance with energetic masticatory movements do, and a diminished flow of saliva means diminished cleansing of the teeth, which are at the same time imperfectly scrubbed by the feeble movement of the parts engaged in mastication, and so it comes about that when the food is soft and pulpy particles of it lodge in and about the teeth and gums, to an extent that is impossible where it is hard and tough, and afford a nidus for those bacterial growths which, alike by the decomposition they set up and their direct attacks, are so inimical to the integrity of the teeth. It has been shown that the jaws and the muscles of mastication are larger in savage than in civilised races. I have little doubt it will be found that there is some atrophy of the parotid, submaxillary and sublingual glands in the latter as compared with the former and then it will appear that tooth-brush and dentifrice are merely auxiliaries to a natural apparatus which has to some extent dwindled by disuse.

In the second place, I would suggest to you as a specific cause of the increase of dental caries a change that has taken place in a food stuff of a particular kind and of primary importance—I mean bread, the staff of life,—from which in the progress of civilisation the coarse elements—and the coarse elements consist of the outer husks of the grains of which it is composed—have been eleminated

In as far as our own country at any rate is concerned, this is essentially an age of white bread and fine flour, and it is an age therefore in which we are no longer partaking to anything like the same amount that our ancestors did of the bran or husky parts of wheat, and so are deprived to a large degree of a chemical element which they contain—namely, fluorine. The late Dr. George Wilson showed that fluorine is more widely distributed in nature than was before his time supposed, but still, as he pointed out, it is but sparingly present where it does occur, and the only channels by which it can apparently find its way into the animal economy are through the siliceous stems of grasses and the outer husks of grain, in which it exists in comparative abundance. Analysis has proved that the enamel of the teeth contains more fluorine in the form of fluorine of calcium, than any other part of the body and fluorine might, indeed, be regarded as the characteristic chemical constituent of this structure the hardest of all animal tissue and containing 95·5 per cent. of salts, against 72 per cent. in the dentine. As this is so it is clear that a supply of fluorine, while the developement of the teeth is proceeding, is essential to the proper formation of the enamel and that any deficiency in this respect must result in thin and inferior enamel. If, in our dislike to grittiness, which has run parallel to our addiction to soft and succulent food and in our preference for white and fine flour, we have cut off the main source of supply of fluorine to our systems, it is not difficult to understand how we may have thereby incurred comparatively feeble and unprotected teeth, with a diminished power of resistance to adverse influences and peculiarly liable to decay. For the dense close-fitting prisms of the enamel are to the tooth what its armour-plates are to a modern ship of war ; and if they are easily penetrated, corroded, or worn away, then the fate of the dentine within is sealed. I think it well worthy of consideration whether the reintroduction into our diet, and especially into the diet of childbearing women and of children, of a supply of fluorine in some suitable natural form—and what form can be more suitable than that in which it exists in the pellicles of our grain stuffs ?—might not do something to fortify the teeth of the next generation.

In the third place, I would name to you, as a cause of increased dental decay in our population, the high nervous tension of our times and the impaired nutrition which that high tension frequently entails, either hereditarily or by its operation on the individual life.

It is everlastingly true that when the parents have eaten sour grapes the children's teeth are set on edge, that when the parents have been prodigal of their strength the children are impoverished in constitution. Intense vitality of the conjugating spermatozoon and ovum is necessary to give the new being a fair start on its career and to impart to it an impulse which will carry it and all its tissues steadily through the perils and vicissitudes of development and maturity to the gentle declivity of kindly old age. Such intense vitality of the spermatozoon and ovum is not to be expected when the parents who produce them are labouring under nervous exhaustion; so there are now vast numbers of human beings, the offspring of of neurotic or neurasthenic parents, sent "into this breathing world," "deformed, unfinished," and "scarce half made up," whose teeth are delicate and destined to premature decay. The gastro-intestinal mucous membrane of the embryo from which the pulps and sacs of the teeth originate may in such cases be supposed to have been wanting in in formative energy, or the trophic influence from nerve centres which is exerted, if not during the papillary and follicular, certainly throughout the saccular and eruptive stages of dentition, may be persumed to have been defective. It is to be remembered that as early as the fourteenth week of embryonic life, when the membrane of the dental groove with its adherent follicles and their pulps are stripped off, there may be seen dental nerves running along under the follicles and distributing twigs to each of them; it is certain that from this time till the completion of dentition at the twentieth year the development of the teeth is more or less under nervous control. It is not to be expected, I think, that robust teeth will grow and come forth in due order in children who are kept in a state of nervous excitement or overstrain. While I am quite satisfied that inherited tendencies are more potent than personal experiences in inducing the dental debility which we encounter in nervous children, I still cannot acquit our modern system of education, with the over-pressure into which it so often runs, of some share in it causation, directly through interference with the growth and eruption of the teeth, as well as indirectly through interference with digestion and secretion and the consequent establishment in the mouth of conditions favourable to dental caries. It is, I think, corroborative of the view that nervous tension contributes to dental caries that your statistics show that as regards caries better class schools are in a worse condition than those in which lower class children are educated. Better class children have of course more care bestowed on their teeth than those of a lower class, but they are at the same time of more nervous temperament and are more subject to nervous strain. With the view of ascertaining how far dental defects and decay are associated with arrested development of the nervous system, I carefully examined, by the permission of Dr. Shuttleworth and with his kind assistance and that of Dr. Telford Smith, the teeth of 113 idiots and imbeciles in the Royal Albert Asylum, at Lancaster, about a fortnight ago. I cannot here of course enter upon any details or give even a general summary of the observations made, but I may tell you that there was not amongt these 113 idiots and imbeciles of an average age of seventeen years one denture perfect or approaching perfection. Dental caries was present in every case save three, and in one of these three cases six teeth had been removed and in another two, so that there was only one boy out of 113 idiots and imbeciles who did not present evidence of past or present dental caries, and in him the teeth were crowded, displaced, and pitted. In a vast majority of cases the caries might be described as galloping and had been widely and deeply destructive, so that the mouths of these blighted creatures presented a lamentable spectacle and might, without hyperbole, be addressed by the dentist called in to examine them in the language used by Romeo when breaking into the vault of the Capulets :

> " Thou detestable maw, thou womb of death,
> Thus I enforce thy rotten jaws to open."

Besides caries there were many other dental defects noted in the weak-minded inmates of the Royal Albert Asylum. There were overcrowding and displacement of teeth in seventy-five cases, sometimes to such an extreme degree as to produce two distinct rows of incisors in the upper jaw, the central incisors in front and the lateral incisors behind, and this overcrowding depending upon contraction of the jaws, the upper jaw being V-shaped, semi V-shaped, or saddle-shaped, and invariably associated with narrowness and arching of the palate, was three times as frequent in girls as in boys. There were notching, pitting, and honeycombing of the teeth in eighteen cases and these conditions were five times more frequent in boys than in girls, while in almost every case there was observed either natural absence of a tooth or teeth, delayed eruption of a tooth or teeth, dwarfing of teeth, or malformation of one or more teeth, while in a considerable number of cases there were hypertrophy, hyperplasia or distortion of the alveolar processes and gums. Without entering on further particulars I would say that my limited survey of the teeth of idiots and imbeciles has convinced me that much valuable information will be derived from a systematic study of the developmental irregularities of the teeth and jaws which abound amongst them—a study which has been touched on by Cartwright, Ballard, Ireland, Langdon Down, and Oakley Coles, which was seriously undertaken some years ago by your colleague, Dr. Talbot, of Chicago, who did not, however, push his enquiries very far, but limited them to maxillary modifications. It is obvious, I think, that the condition of the several teeth in the weak-minded will sometimes guide to the particular point in the evolution of the nerve centres when arrest in development took place, while the distribution of caries amongst their teeth will throw light on some obscure questions in dental pathology. It is obvious that certain types of teeth are characteristic of certain varieties of mental defect, and it is possible therefore that certain less marked but still perhaps distinctive dental characters are associated with certain mental qualities in those who are not weak-minded, and the dentistry might afford glimpses of insight and prescience to which palmistry has only pretended to attain. It is obvious above all that cerebral abnormalities, congenital and developmental, have associated with them dental malformations and degenerations of an exceedingly marked kind and it is probable therefore that cerebral disorders in the young when dentition is still incomplete may impair the soundness of the teeth, and so as I have said the nervous high tension of the age, which is so apt to induce cerebral disorder, may be a contributory cause of the increase of dental caries in these days.

In the fourth place, I would mention as a possible cause of the increased prevalence of dental caries amongst us the growing aggregation of our population in large towns, for this aggregation entails for old and young higher nervous tension than country life, a greater liability to anæmia and a low standard of health, and also to several zymotic and constitutional diseases, which not less than general reduction of health and nervous exhaustion leave their stamp on the teeth in impaired nutrition. But more than this, the conditions of town life conduce especially to those forms of dental failure which depend on bacterial onslaughts. Wherever human population is thick on the ground, bacterial population is thick in the air, and in our crowded cities we have a crowded atmosphere contrasting unfavourably with the pure air of the country and conveying constantly into the mouths of men, women and children, volumes of parasites, pathogenetic and non-pathogenetic. The mouth is indeed veritably a menagerie of tame and wild bacteria. Miller found twenty-two kinds of bacteria in the mouth, of which sixteen brought about an acid reaction when cultivated in beef extract peptone, while four produced an alkaline solution, and only two a neutral one. Six organisms are invariably found in the human mouth, almost invariably another three or four, and during epidemics or when there has been contact with persons suffering from various diseases the organisms associated with these diseases and epidemics are frequently detected in the mouth mingling with its habitual inhabitants, a fact which reminds me of the curious way in which home lore sometimes anticipates scientific discovery ; for as a boy I was instructed, and I daresay many of you were so also, always to spit vigorously for some time after passing a person supposed to be afflicted by any infectious disease or any house where it was known to exist. The frequent presence of such organisms in the mouth as well as of others of a still more virulent type—such as that of sputum septicæmia, which is harmless until there is, from some cause set up, congestion or œdema of the lung, when it immediately induces croupous pneumonia or gangrene, or that of acute septicæmia, or such as the streptococcus aureus and albus—seems to make it incumbent on the dentist to practice thorough antiseptic cleansing of the mouth before even trifling operations are undertaken, in town at any rate, for suppuration and symptoms of chronic poisoning and of pyæmia have followed even the extraction of a tooth or lancing of the gums.

Whether indigenous or of occasional and foreign intrusion, the bacteria which haunt the mouth, find there conditions eminently suitable to their rapid multiplication. The mouth is indeed an incubating chamber specially prepared for bacterial cultivation. In it the proper temperature is steadily kept up and the proper degree of moisture and aeration is maintained, while proper nutriment is liberally supplied in particles of food which adhere to the teeth and gums, in the desquamating epithelium, in the sugar resulting from the transformation of starch by the action of ptyalin, and in the substance of the teeth themselves. In sections of decalcified teeth, stained with fuchsin and vesuvin, bacteria are often seen scattered irregularly through the dentine when it is undergoing decay or softening; and although these bacteria may be only playing a secondary part, it is to be borne in mind that it is an important part and that it has only become possible because other bacteria have taken the initiative. It is when the enamel is removed that bacterial inroads in the dentine become practicable, and the removal of the enamel is effected by lactic acid and the peptonising enzyme which other bacilli produce. Miller found in his experiments on artificial decay that as long as the enamel was entire, acids had no power to injure the dentine beneath, but wherever the enamel was thin or imperfectly developed the dentine was soon softened by any acid that was present, and the canaliculi were then speedily filled with bacteria, which gave rise to irregular corrosion. As a large majority of the bacteria which find their way into the mouth do produce acids, it is evident that conditions that increase the bacterial supply to the mouth must promote the destruction of enamel and the invasion of the dental tubules, so that the aggregation of the people in towns must tend to the diffusion of dental caries.

There are other conditions of modern life, such as the catholic habit of smoking tobacco and the frequent administration in the treatment of debility of drugs, like the perchloride of iron and hydrochloric acid, that are rapidly destructive of enamel, which have perhaps contributed to the reign of caries that we deplore—a reign that still extends, notwithstanding an enhanced degree of attention bestowed upon the care of the teeth, as indicated by the huge increase in the manufacture and sale of toothbrushes and tooth-pastes and powders during the last twenty years. But the principal causes of the increase of dental caries have, I believe, been summed up in what I have said to you this afternoon, and the practical question that now arises is what can be done to remove these causes or to counteract their effects, to banish from our country a blight that has invaded every household, and to secure to our people the boon of sound and serviceable teeth.

I have said that the present state of matters is deplorable. I am sure you will agree with me that it is harrowing to reflect on the pain and sleeplessness and distress that are daily due to dental caries in this country. Beyond these immediate evils accruing from it, there are remote consequences which are even more grievous. Decay of the teeth implies imperfect mastication, delayed digestion, impaired assimilation, and a whole train of derangements which embitter and sometimes shorten life. It implies also imperfect articulation and therefore some social disability ; and further than this, I would affirm that it implies sometimes danger to mental health, for in a sensitive woman, especially if she is otherwise pretty, the knowledge that she has unsightly teeth, or an obviously artificial set, is just one of those minor but constantly recurring worries and chagrins that tend to upset the equilibrium of the nervous system. The prevention of dental decay, then, and the preservation of sound teeth, become hygienic and prophylactic measures of the first moment. The boy who can masticate has a much better prospect of success and happiness in life than he who can merely munch, and the girl who dares to show her teeth will have more joy in her womanhood than she who has to veil them behind an imperturbable upper lip.

What, then, are the hygienic and prophylactic measures which should be resorted to for the prevention of dental caries and the preservation of sound teeth ? The most important, the most hopeful of all of them, are those which you are met to discuss this afternoon, and which have reference to the care of the teeth of children during the period of schooling. We cannot roll back the tide of evolutionary change, abolish the potato and other pulpy foods, cool down the fever of competition, or reverse the centripetal force that is drawing our labouring classes into towns ; but we can do much, very much, to avert and counteract the injurious effects upon the teeth which are exerted by such movements towards more artificial modes of life ; and, best of all, we can do this in early life. The reformation of the vicious and criminal classes can only be successfully carried out amongst the young ; and dental delinquency is only to be efficiently dealt with—on the large scale, at any rate—amongst those of tender years. I would, perhaps, not be going too far in alleging that if universal, continuous, and skilful supervision and management of the teeth during their development and eruption —that is, up till twenty years of age—could be secured, there would be practically nothing to do to the teeth afterwards. Once safely brought through the perils of youth, they might, in a vast majority of instances, be left to themselves afterwards without any fear of their degenerating, even under circumstances of trial and neglect.

It is during childhood that tooth troubles originate, and it seems to me that you are performing a great public duty, in a manner worthy of an unselfish profession, in calling attention to the alarming prevalence of dental caries amongst school children, and in asking that steps be taken to arrest its progress and prevent its spread. It seems to me that you have already made out an unanswerable case in favour of interference, and I cannot doubt that you will soon be successful in securing it. You have shown the reality and the magnitude of the evil as it exists ; you have shown the practicability of dealing with it remedially, and you are entitled to insist that easily attainable protection shall be given against an evil, distressing in itself and pernicious and far-reaching in its consequences.

In the first place, I would say it is the clear and pressing duty of Government or Parliament to provide that in all public institutions for the maintenance or education of the young, whether under public control, as in the case of training ships, reformatories, industrial and workhouse schools, or under the management of committees of subscribers, as in the case of orphanages, hospitals and homes the teeth of the children shall be periodically examined by a qualified dentist and everything that is needful done for their preservation. The governing bodies of such institutions stand *in loco parentis* and are bound to do everything that a good and prudent parent would do to guard the children under their charge against suffering and illness and equip them thoroughly to earn their living. Of the children in such schools a large number ought to look forward to joining the public services, and in order to do that it is essential that they should have sound teeth, for, as we know, a considerable percentage of young men desiring to enter the army and navy are rejected annually solely on account of dental disease.

As regards Board Schools, there would certainly be greater difficulty in introducing compulsory dentistry. There would, no doubt, be resistance by ignorant and stupid parents, and perhaps by a pig-headed Society, to any operative procedure enforced to ensure to children the inestimable blessing of sound teeth, just as there is opposition to compulsory vaccination and other beneficient measures of a like kind ; but as far as I can see, there could be no objection to compulsory inspection of teeth, and it is this, I respectfully submit to you that you ought to aim at, and that, were it once fully introduced, would ultimately secure for us nearly all we want. Were statutory powers obtained, making it obligatory upon all School Boards and committees of schools receiving grants, to have the teeth of every child attending these schools examined by a qualified dentist twice a year ; to forward to the parent or guardian of every child a copy of the dentist's report, indicating, wherever interference is necessary, what measures are required for the preservation of the child's teeth ; and to provide at a cheap rate to parents and guardians disposed to avail themselves of it the assistance necessary to carry out these measures, then I feel satisfied that dental caries would be immediately circumscribed in its ravages and in a few generations become comparatively rare. The very existence of such a system would create a public opinion in favour of sound teeth, it would bring home to the people a sense of the value of tooth culture and lead to the widespread adoption of domestic precautions against dental caries, now too much neglected. In so doing it would have advantages beyond those merely relating to the teeth, for you may depend upon it, that the simple ceremonial observance of the morning and evening tooth-brush, regularly performed, exalts self-respect and so has a wholesome effect upon moral character.

A system of compulsory inspection of the teeth of school children and State-aided rectification of defects in them, such as I have alluded to, would of course entail a large outlay of money, for I contemplate that the dentists employed in this public service would be adequately remunerated for their labours ; but the money would be well spent and would yield a splendid return in the increased comfort, contentment, health and vigour of our people. Rather than it should not be spent on so laudable and desirable an undertaking—and truly our school rates are already high—I would willingly see some curtailment of the curriculum which our Board Schools now offer. Nutrition, I have often said, comes before education. It is wasteful and even cruel to force education on half-starved children, and teeth, I would now assert, come before talents. It is preposterous to confer shreds of showy accomplishments on children who cannot chew their food ; and sure I am that it would be for the ultimate welfare of the country (if so be that adequate tooth culture cannot be otherwise secured) even that the grand piano in some of our London Board Schools should give place for a time to the dentist's chair. Admirable is the grand piano in its way ; it is the high altar of popular æsthetics, but Chopin and Wagner ill accord with the groans of toothache. Horrible, no doubt, in its way is the dentist's chair, excruciating are the associations that cluster round it, but a timely resort to it robs it of its terrors and converts it into a benefactor that lifts us from purgatorial pains into paradisaical tranquility and ease. The union of teeth is a far more momentous matter than that union of hearts of which we have heard so much lately.

Taken in its incipient stage caries is readily extirpated and stayed, and one of the most pleasing features in your profession at the present day, if I may say so, is the anxiety you manifest to save teeth in which it has already made serious inroads and to sacrifice as little as possible of natural dental structure. Marvellous is your skill, but you cannot yet supply artificial teeth with the true vital polish, and firm, nice and sentient in grip like the natural organ planted in its living alveolus, and your efforts are therefore directed to preserving that natural organ, even when badly damaged, whenever it is practicable to do so. Extraction which was at one time the approbrium of your art, just as amputation was of surgery, is now comparatively rarely practised, except by old-fashioned or questionable practitioners—although it is still, I fear, too frequently resorted to by members of my profession when trespassing, as they are often obliged to do, on your domains. Blake, the artist, left us a grotesque and curious portrait of the ghost of a flea—a hideous figure covered with scaly skin of black and gold, with a murderer's countenance and eager tongue whisking out of its mouth and a cup in its clawed hands to hold the blood. I much wish he had bequeathed to us his conception of the ghost of a lost tooth, a spectre of ivory pallor and hollow visage, with quivering fangs for limbs, wormeaten, writhing in agony and waving aloft forceps and key ; and even more do I wish that such a spectre could be set to plague every dentist or doctor who has been guilty of denticide or the unnecessary extraction of a saveable tooth. But no such ill visions, gentlemen, will affright you, for I know how scrupulously conservative you are, how loth even to confer euthanasia on a perishing stump. In conclusion, I would beg very cordially to wish you success in your efforts to secure the protection of the teeth of the young and I would exhort you to steady perseverance in these efforts, undaunted by opposition, unruffled by ridicule and undiscouraged by failure, for your cause is a good and it must prevail. You are a wing, an useful and honoured wing, of the great army that is giving unceasing battle to the powers of darkness, disease and death.

SHOCK AND COLLAPSE RESULTING FROM DENTAL OPERATIONS.*

BY JOHN S. MARSHALL, M.D., CHICAGO, ILL.

DEALING first with shock, Dr. Marshall says:—Shock is a good old Saxon word, meaning, to shake,—to shake with violence. As applied to medicine and surgery, it comprehends "sudden or instantaneous depression or organic, nervous, or vital power, often with more or less perturbation of body and mind, passing either into reaction or into fatal sinking; occasioned by the nature, severity, or extent of an injury, or by over-whelming moral calamity." (Copland, in Dunglison's "Medical Dictionary.") Another definition is as follows: "A condition of sudden depression of the whole functions of the body, due to powerful impressions upon the system by physical injury or mental emotion. Its more obvious manifestations are signs of lowered activity of the cardiac, respiratory, and sensorial functions; and reduction of surface temperature." (Sir William MacCormac, in Quain's "Dictionary of Medicine.")

COLLAPSE.

Definition.—Collapse comes from the Latin *Collapsus*, meaning, to fall together,—to fall in ruins. Medically, a general prostration or failure of the vital powers. "A complete prostration of strength, either at the commencement or in the progress of the disease." (Dunglison's "Medical Dictionary.") Another authority says, "Collapse is a state of nervous prostration. When it is extreme, the vital functions are in a condition of partial and sometimes, nearly complete abeyance. It may terminate in death, or be followed by gradual reaction and complete recovery. . . . Collapse and shock have usually been classed together, but it is not accurate to do so. It is true that the ganglionic centres of the medulla oblongata are more or less profoundly involved in both, and that both possess many symptoms in common, dependent upon the derangement of function of one or more of these centres. Some confusion is attributable to the fact that shock is a term applied not only to a state or morbid condition, but to the cause which most frequently produces that condition,—a violent impression or 'shock' to the nervous centres. Collapse arise from many different causes, shock being one, of which collapse may be regarded as a final and extreme degree, and into which it often imperceptibly passes.

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*Read at a meeting of the New York Odontological Society, March 15, 1892.

"Collapse, on the other hand, may occur under conditions where there has been no antecedent state of shock. Collapse presupposes nervous exhaustion, while shock may instantly appear in a healthy individual." (Sir William McCormac, in Quain's "Dictionary of Medicine.")

Shock, therefore, may appear instantaneously in healthy individuals, and is caused by fright, extreme mental emotion, accidental injury, or surgical operations; the depression of vital force being slight or severe according to the impression made upon the nerve-centres; the tendency being generally towards reactions, which may take place in a few minutes or not for several hours; while in extreme cases it may terminate fatally.

Collapse, on the other hand, generally manifests itself in persons who have undergone previous prolonged nervous strain which has caused exhaustion; the system is therefore at a disadvantage if called upon to sustain the debilitating effects of disease, or any of the accidental, emotional, or surgical conditions just mentioned. The depression of vital force is more prolonged and extreme, depending upon the strength of the individual and the character and severity of the exciting cause. Reaction sets in less quickly, and complete recovery may require weeks or months to be accomplished.

Collapse, in its most extreme form, following cholera, yellow fever, or shock from severe accident or surgical injury generally, proves fatal. Shock, with severe hæmorrhage, often causes fatal collapse.

Prolonged and painful dental operations generally produce considerable depression, and in individuals already in a more or less exhausted condition from disease, overwork of mind or body, emotional causes, and occasionally in chlorotic girls, pregnant women, or those suffering from female complaints, and in frail and delicate children, they may produce alarming symptoms of collapse.

There is in the normal condition of the system a very great difference in the nervous excitability and physical endurance of individuals; while in the same persons under abnormal conditions the individual peculiarities are accentuated. All are less able to endure the shock of accidental or surgical injury, or the extremes of joy or grief, if the physical or mental conditions are below the normal.

It is, therefore, as much the duty of the dentist to look into the general conditions of the health of those who present themselves for operations as it is for the surgeon to do so, before commencing any surgical procedure. Only in extreme cases, when immediate operations seems necessary, as the only chance of saving life, will the intelligent surgeon permit himself to operate upon individuals whose immediate physical condition,—as in shock and collapse,—or whose general health, is greatly impaired, without first making the attempt to recuperate the depressed vitality, and place the patient in the best possible condition for the operation. Failure to appreciate the necessity of such treatment tends to disappointment, or disaster of greater or less moment, either in the success of the operation, the after-effects upon the system, or the life of the patient.

There are but few dental diseases which *per se* are dangerous to life in otherwise healthy individuals, and few operations which can be considered as in any sense dangerous to the same class of persons ; and yet the presence of an alveolar abscess or the extraction of a tooth occasionally proves fatal, either from septic infection, a peculiarity in diathesis, or some pre-existent morbid tendency which predisposes to a fatal termination.

On the other hand, painful or prolonged dental operations, like the preparation of a series of exceedingly sensitive cavities of decay, or restoring the contour of the teeth with gold, are very depressing and irritating to the nervous system.

Dr. Litch, in the "American System of Dentistry," vol. iii. p. 71, says, "Operations upon the teeth and associated tissues are often excruciatingly—and in certain conditions of the system dangerously—painful in character. That fatal result may follow such operations, in consequence of reflex impressions made through the fifth nerve upon vital ganglia, is a well established fact."

The dentist is generally obliged to perform these operations without the benefit to his patient of any of the anæsthetics. The nature of the operations, the necessarily upright position of the patient, the considerable amount of time required to complete them, and the difficulties encountered in the maintenance of anæsthesia, preclude the use of these agents ; consequently shock and collapse, in varied degrees, are often the sequel of the severe strain upon the nervous system to which the individual has been subjected. It is not at all uncommon—as I believe every careful observer before me will admit—for strong, robust men, even, to suffer from various symptoms of shock after sitting for two or three hours under the manipulations of the most careful and humane of our profession.

The means at the command of the dentist for the prevention or the mitigation of the suffering incident to dental operations are limited, and known to you all.

The following formulæ have proved very helpful in my practise in relieving the pain attendant upon the preparation of sensitive cavities of decay and preventing nervous exhaustion.

Croton chloral hydrate, grs. x;
Bourbon whisky, ℥i.
Sig.—Twenty minutes before operating.

Morphia sulph., gr. $\frac{1}{4}$;
Bourbon whisky, ℥i.
Sig.—Thirty minutes before operating.

Potassium bromide, grs. xx;
Cinnamon water ℥ii.
Sig.—Thirty minutes before operating.

Potassium bromide, grs. x;
Croton chloral hydrate, grs. x;
Cinnamon water, ℥ii.
Sig.—Thirty minutes before operating.

A wise use of those constitutional remedies, supplemented with the local treatment usually employed, give material aid in relieving the suffering and nervous apprehension of the patient. And if coupled with an educated judgment and quick perception as to the general physical and mental conditions of those presenting themselves for dental operations, and the amount of fatigue and nervous irritation that they are likely to endure with safety, will do much to remove the dangers of such operations, resulting in shock or collapse.

We all have doubtless been more or less guilty of compelling our patients—through carelessness or ignorance of the laws governing the vital forces—to endure the fatigue of long and painful operations when they were by reason of their physical or mental condition, or both, unfit to bear them with impunity.

Children especially should not be compelled to submit to the fatigue and nervous strain of such operations, particularly during the period of rapid growth, puberty, and just preceding it, or while engaged in severe study. At these periods the nervous system is usually taxed to its utmost limit of endurance. When crowded beyond this point the health gives way; and often when too late it is discovered that the foundation has been laid for a train of nervous affections which persist until the end of life.

The practice of filling teeth with gold for children at these periods is, for other reasons than those just now under discussion, not wise, and doubly so when the present and future health of the child is placed in the balance.

The rapid movement of the teeth, by the various methods employed in orthodontia, is often a serious and dangerous operation, on account of the severe and constant irritating influence upon the nerve-centres.

It requires a well-informed mind and the exercise of a clear judgment in order to determine, many times, just what, how, and when this or that operation may be undertaken with safety to the health of the child. It would be much better to sacrifice the personal appearance to the general health ; while, on the other hand, a year or two of schooling might be dispensed with for the sake of the personal appearance. In other words, it would be wisdom to choose health rather than beauty ; while a year or two of rest for the child from school-work, to gain the necessary strength to endure the nervous irritation incident to so many cases in regulating the teeth, would be a small sacrifice to make to improve the personal appearance or to place the teeth in a better position to perform the functions for which they were created.

Chlorotic girls and women suffering from uterine and ovarian diseases in their manifold forms, and during gestation, or the functional changes which establish the menopause, are usually in a more or less exalted state of nervous irritability. The nerve-centres seem to be more easily impressed and reflex disturbances are common.

Dental operations of any kind are not well borne by such individuals ; but if prolonged and painful in character, they should not be undertaken unless they can be performed through the agency of an anæsthetic or anodyne. In most cases it would be much better to adopt palliative and temporary measures until such time as the health is restored rather than by heroic treatment, to run the risk of nervous exhaustion or more serious consequences. Miscarriage and other serious troubles are not unheard of *sequelæ* of heroic operations.

Shock from the extraction of teeth is often severe, sometimes inducing alarming symptoms. Syncope is the most common ; but this is often followed by a decrease in the surface temperature, cold perspiration, feeble pulse, muscular tremor, nausea, and vomiting, in the more severe cases the depression may be so great as to cause a fatal termination.

Cases of death following the extraction of teeth under the influence of anæsthetics, and sometimes attributed to heart-disease,—fatty degeneration, dilatation, valvular disease, etc.,—are no doubt often the result of shock induced through the progress of the operation before the sensory nerves were completely paralyzed by the action of the anæsthetic. The fifth nerve is considered to be the most sensitive nerve of the body, and it is also among the last to yield to the influences of the anæsthetic drugs. The necessity, therefore, of complete anæsthesia in tooth-extraction, or in any other operation in which this nerve is painfully involved, is self evident.

The anæsthetic drugs are administered to annihilate pain and prevent shock from the surgical injury ; but if they are not carried to the point of profound impression or complete anæsthesia, the desired result is not obtained. The loss of mental consciousness is not anæsthesia, but this condition takes place before the sensory function of the fifth nerve is paralyzed. There is less danger to life in surgical operations from profound than from partial anæsthesia. Partial anæsthesia invites shock, while profound anæsthesia prevents it, as every surgeon and dentist of experience can attest.

Cases are on record, in considerable number, of persons who have died from shock superinduced by mental excitement,—fright, sudden joy, or some great sorrow, the dread of a surgical operation sometimes of even a trivial nature. In many of these cases there was evidence of a weakened condition of the system, most often associated with diseases of the heart.

Dr. George W. Gray, in the "Reference Hand-Book Medical Sciences," vol. vi. p. 439, says, "Lauder Brunton relates a remarkable case of sudden death from shock the result of mental emotion. Some medical students seized the janitor, who had displeased them, and made him believe they intended to behead him. They placed him before a block and blindfolded him, then struck him a sharp blow upon the back of the neck with a wet towel. On removing the bandage they were horrified to find that he was dead." In the early years of my practise I often operated for individuals—when their time was limited—four, five, and even six hours at a sitting, with only an intermission of a few minutes for luncheon. Looking back upon it now, I cannot refrain from quoting, as applicable to the circumstances, the old familiar line, "Fools rush in where angels fear to tread."

Frequently after such prolonged sittings, particularly when the operations were large gold fillings, the patient has left the chair completely exhausted, and sometimes fainted, presenting marked symptoms of shock, and requiring active measures for resuscitation; while in others cases they have been confined to the bed several days thereafter, from nervous exhaustion.

One case of this character occurred in my practise several years ago, and taught me a valuable lesson.

The history is briefly as follows: J. R., aged fifteen years, health good, but growing rapidly, was brought to me by his mother, three days before he must leave home for boarding school, with the request that his teeth be put in good order. After an examination, it was found that there was so much to be done that a week would be required, with sittings of from two to three hours each day to complete it. The mother insisted upon it being done in the given time, as he could not be late in entering his school. My better judgment was overruled and the work was done, the sitting averaged six hours per day. The boy left the office on the last day very much fatigued. Next day the father called to say that his son was quite ill, and seemed to be laboring under considerable nervous excitement; low nervous fever with great depression followed, which confined him to his bed for a little over four weeks, and he did not enter school until two months after the formal opening.

As further illustrations, I will relate very briefly three other cases from my own practise, one from that of a friend, and three others from the practise of my associate, Dr. Allport.

Mrs. C., aged forty-seven years, in fair health; apparently menopause not yet fully established. Has borne no children. Was operated upon three years ago for the treatment of a chronic alveolar abscess, of ten years standing, by extraction and replantation by the method described in a late number of the *Dental Cosmos*. No anæsthetic was used, as the patient objected to taking it. The operation was well borne, and the lady went home with instructions to return if the tooth gave any annoyance. She did not return. One week after the operation I was sent for, and found her in bed, looking pale and very much exhausted. Her family physician had been in daily attendance since the operation. When called he found her extremities cold, the pulse weak and accelerated, nausea and vomiting, and a very anxious expression of countenance. Restoratives were administered, and after a few hours these symptoms passed away. A low fever followed, from which she recovered slowly. Three months after the operation—which, by the way, was successful, the tooth reuniting with the alveolus without pain or soreness—she left her room for the first time.

The explanation is plain. The nervous system at the time of the operation was taxed to the full extent of endurance by the change taking place in the reproductive functions. The shock of the operation was "the last straw that broke the back" of an already exhausted nervous system. Prostration followed, from which recovery was slow on account of the functional changes which were taking place.

Mrs. L. T. E., a frail-looking, nervous woman, aged twenty-seven years, married five years, and has three living children, the youngest one year old. Health has been delicate since the birth of the last child. Was given a sitting recently for gold filling of one and one-half hours. She was exceedingly nervous and in great dread of the operation.

To obtund sensibility and to quiet the nervous condition the following was administered twenty minutes before operating:

Croton chloral hydrate, grs. x;
Bourbon whiskey, ℥i.
Sig.—Twenty minutes before the operation.

The patient left the office very much fatigued. On arriving home she immediately went to bed, where she was obliged to remain for four days suffering from nervous exhaustion. In this case the operation was not severe nor especially painful.

One-hour sittings for the introduction of plastic fillings have since this time been better borne, but considerable exhaustion followed. The chloral hydrate and whiskey are administered at each sitting, at the earnest request of the patient, and she declares she could not endure the pain without them.

Mr. L. E., a strong, robust-looking man, an operator upon the Chicago Board of Trade, aged fifty-two years, who had just passed through the excitement and anxiety of a corner in wheat in which he had lost heavily, was given a two hours' sitting for a large contour gold operation. On leaving the chair he complained of great depression and faintness. Stimulants were administered, and he soon recovered sufficiently to return home. He afterwards told me that he kept his bed for three days thereafter, being unable to rise on account of the extreme exhaustion.

Several years ago, in a city in central New York, a lady past fifty years of age called upon a professional friend for the extraction of an aching tooth. She was placed in the chair preparatory to the operation, when almost immediately she expired. The post-mortem examination revealed fatty degeneration of the heart. The coroner's verdict was death from heart-disease, caused by fright. This is an exceptional case ; but it illustrates the fact that shock is sometimes superinduced by mental excitement ; and that it may under certain weakened conditions of the heart terminate in instant death.

The following cases are from the practise of Dr. Allport :

Mrs. B., aged thirty years, general health good. Pregnant for the fourth time. During each previous pregnancy one or more teeth needed attention, and invariably, when they had been filled with gold requiring extended sittings, nervous prostration has been great ; several days being required to recover from it. At the last visit plastic fillings were inserted and the sittings shortened, as the past experience indicated that temporary treatment only was admissible. No prostration followed.

Miss M. G., aged seventeen years, physically frail and exceedingly nervous. Has been under his care since she was nine years old. Teeth very soft. Her record shows sixty-nine fillings have been inserted during this time, all of them a combination of tin and gold. The reasons for this line of treatment were, first, the great saving of fatigue and the nervous energy of the patient,—such fillings can be inserted in one-third of the time required for gold fillings,—and the greater preservative qualities of the combination of metals over gold alone. Had this child been compelled to endure the physical and nervous strain incident to so many gold operations, her health would in all probability have been permanently injured.

Mr. W. D., lawyer, aged fifty years. Strong and robust and of great physical endurance. Had been a regular patient for twenty-five years. Five years ago he was injured by his horse falling upon him, breaking the right femur and fracturing several ribs. The nervous shock was very great and he never fully recovered from it. Before the accident he had always prided himself upon being able to endure any amount of physical suffering incident to dental operations without flinching. After the accident he was never able to endure a sitting of more than fifteen or twenty minutes long, while during the whole time perspiration would stand in great drops upon his forehead, and he would complain of suffering the most intense agony.

It was only possible to insert temporary fillings from this time until his death, which occurred about two years ago. The fatigue and prostration following even these short sittings was very considerable, and emphasizes the fact that the character of the operations must be tempered to the physical condition of each individual.

Several other marked cases could be recited if time would permit, but these are sufficient for the purposes of illustration.

In the foregoing pages I have endeavoured to lay before you the various conditions of surgical shock and collapse, which occasionally result from operations, which to healthy and robust individuals may be of trivial moment, but in those of exalted nervous sensibility, or the physically or mentally overworked, or depressed, result in serious and possibly fatal consequences.

The prevention of such untoward results will depend very largely upon our ability to correctly diagnosticate the physical condition of each individual presenting himself for dental operations; to correctly judge as to the amount of fatigue and suffering each can endure without detriment to health; and the proper use of drugs and other means at our command to mitigate the suffering.

In conclusion let me call your attention to the operator himself.

The dentist of full practise is under a constant nervous and mental strain for from six to eight hours every day. The character of his work requires the closest application, and a skill of no mean degree; the eye must be clear, the hand steady, the brain unclouded. His sensibilities must be under control, his sympathies ready to be drawn upon at any moment to an unlimited extent, his patience must be inexhaustible, his physical endurance and nervous energy that of a Hercules.

I venture to say that the "wear and tear" upon the vital powers of a busy dentist is greater than that of any other class of professional men, the physician and surgeon not excepted. It is granted that the responsibilities which often compass the issues of life and death are much oftener borne by the physician and the surgeon than by the dentist; but, on the other hand, these responsibilities are not being constantly carried; while the difference in the character and surroundings of the cases under treatment gives variety to the work and in a certain sense lightens the load.

In the daily professional life of the dentist there is but little variety. He must perform the same monotonous round of operations, endure the same strain upon already overwrought nerves, the same draught upon his sympathies and patience, and the same tax upon his physical endurance. " 'Tis the constant dripping that wears away the stone." Add to these the long hours of close confinement, the stooping positions with contracted chest, the breathing of the poisonous gases of the expired air, and the dangers from disease-infection, and I ask, Is not such a life infinitely more taxing upon the vital energies than that of any other profession?

The fatigue which follows a day's labour, such as I have just indicated, must be experienced to be appreciated. Such labour, continued day after day and week after week, is very exhausting; the appetite fails, digestion and assimilation are impaired, the nerve-centres are disturbed, and unless rest is immediately taken, insomnia or complete nervous prostration is the result.

Some have attempted to recuperate the strength by the use of alcoholic stimulants; but this only places the evil day a few steps further into the future, while, if this course is pursued, the habit grows upon them, and when the final day of reckoning comes, the misery is all the greater.

What we need is variety in occupation. I would therefore recommend every dentist to have a "hobby," and ride it well. He should also take frequent periods of recreation with rod or gun, horse or wheel, shell or yacht.

Get out into God's free air; drop all thought of your profession; leave the disagreeables behind you, and become for a little time a boy again!

A half-hour's rest after the mid-day meal is a good thing to indulge in, and if practised every day will prove of very great benefit. Such time is not lost, for with fresh energies more can be accomplished in the same length of time than with powers rendered weak by fatigue.

I fancy some of you are saying, "Don't you find it easier to preach than to practise?" Forsooth, I do! Yet occasionally I practise what I preach by breaking away, as upon this occasion, from my duties and responsibilities, to enjoy the the good things of the world; not the least of which is the fellowship of my professional friends.—*International Dental Journal.*

Journalistic Memorabilia.

SPONGE GRAFTING.

Mr. George Brunton of Leeds suggests the use of the sponge-graft in cases when the apex of the root to be filled is absorbed or the side perforated, which has enabled him to preserve to the patient roots which would otherwise have been lost.

His method is after cleaning out all nerve débris, etc , push a small piece of sterilized sponge up to and *through* the apex. The sponge must go through. On emerging through the apex, the sponge will spread out and fill the absorbed cup-shaped space; fibrous tissues will run into the sponge and a healthy graft will result, and the filling of the canal may be proceeded with in the ordinary way, either immediately or at a subsequent appointment.

In some cases we are obliged to destroy and remove the pulp in teeth, the roots of which are not complete.

He has also used the sponge-graft in a tooth socket after extraction. Ten cases of absorbed roots have been treated, two cases of perforation through the side, and two cases of incomplete development. He cites some cases.

No. 1. Miss B., aged 35, upper left lateral and canine much decayed, pustule over each root, ends of both roots absorbed, decayed crowns cut down, canals cleaned and sterilized, sponge-graft inserted and root canals sealed with cement.

No. 2. Mr. C., age 40, root of upper right first bicuspid perforated on the lingual side by decay, bleeding difficult to control, plugged perforation with pledget of cotton wool saturated in chloralum, prepared root canal and filled upper third, then inserted sponge-graft and finished lower two-thirds of canal with the usual gutta-percha point.

No. 3. C. P., aged 8, lower left six-year molar much decayed, pulp putrid, ends of roots incomplete, root canals cleaned and enlarged with drill mopped with perchloride of mercury, 1 in 100, sponge-graft inserted, canals filled with gutta-percha points and very large amalgam filling in crown at one sitting.

No. 4. Mr. F. L., 26, upper right second bicuspid extracted, patient returned three days after complaining of trouble from the socket, prescribed syringing with Condy's fluid, after a fortnight's treatment found no granulation in socket, cut and trimmed a piece of sterilized sponge to somewhat the form and size of extracted root, wiped out socket with weak phenate of soda, inserted sponge and sent patient home cured.

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REPORTS OF SOCIETIES.

THE ANNUAL GENERAL MEETING OF THE BRITISH DENTAL ASSOCIATION.

THE thirteenth Annual Meeting of the British Dental Association was held on August 11th, 12th and 13th, at Owen's College, Manchester, kindly placed at the disposal of the Association by the authorities, there being a large and representative gathering of members of the dental branch of the medical profession present from all parts of the country. The meeting was inaugurated on Wednesday evening by a reception given at the Town Hall by the Mayor of Manchester (Mr. Alderman Bosdin T. Leech) who with the Mayoress received the guests on their arrival. During the evening the visitors after inspecting the magnificient building assembled in the large hall where the Mayor addressed a few words of welcome. The citizens of Manchester, he said, were always glad to see Manchester the centre and meeting place of large associations, either with a benevolent or educational object, and they were very pleased to have a visit from the members of the British Dental Association. He should do what he could during their visit to make it a pleasant one. There was no doubt that the object their Association had in view was one calculated to be one of the greatest benefit to the community at large. He was quite sure a great share of the misery that existed at the present time was due to the neglect of dentistry. People received great benefit and happiness by the skill which dentists brought to bear in following their profession, and he only regretted that the establishment of a dental hospital in that city did not receive that encouragement it ought to receive. It was the desire of many citizens that Manchester should have a Dental Hospital worthy of the city, and he hoped the visit of the British Dental Association to Manchester might further that object.

At half-past nine the following morning a meeting of the Representative Board was held in the Council Chamber of the College, and at eleven the annual general business meeting took place in the Chemical Theatre. The PRESIDENT, Mr. J. Smith-Turner (London), occupied the chair, and received a cordial welcome. Letters regretting inability to attend were received from Principal Ward and the Dean of the Department of Medicine (Professor A. S. Young), both gentlemen being away from Manchester. Dr. Ward, in his letter, remarked that the necessity of taking a holiday prevented him from taking the opportunity of showing publicly how pleased the authorities of the College were that such an important gathering should be held in their buildings. They were fully alive to the importance of the creation in Manchester of a dental school of a first-rate scientific character, and he should have been glad to be able to express to the members of the Association how desirous they would always be at Owen's College to do all in their power to facilitate the prosecution of their branch of medical study in connection with their own enlarged and developed hospital.

Mr. W. H. WOODRUFF, the Treasurer, presented the financial statement, which showed that the financial condition of the Association was in every way satisfactory, and that it gave evidence of continued progress.

Mr. W. B. PATERSON, the Hon. Secretary, read the report, which at the outset referred to the steps which were being taken to protect the members of the Association against unqualified practitioners. The report of the Committee of Investigation of the Teeth of School Children would be presented to the Association, and the results so far, he thought, might be considered satisfactory. It was to be remembered that the whole business was new to them as an Association, and was also new to everybody in this country, and the Committee, therefore, deserved at the hands of the Association the greatest possible latitude in the conduct of that important line of work by the Association. One result of the Association's efforts to arouse a proper interest in and appreciation of dental surgery in connection with the army and navy medical services had recently been published. He alluded to the action of the Medical Director-General of the Navy, who recognising the justice of the claims they had made for certain branches of the service receiving dental attention, had ordered a limited number of naval surgeons on furlough to various hospitals, with a view to their acquiring a knowledge of some of the elements of the dental art, viz., those more especially relative to the immediate relief of pain. Although that was not all that they required or that the service required, it was at all events a recognition of the necessity of dental education and dental skill being required for the naval service generally. That, they might safely say, was a concession to the utility and necessity of dental surgery which had never before been made, and which they might fairly assume never would have been made but for the efforts of the British Dental Association. It was, however, only a beginning—they might say a small beginning—of what they hoped yet to be able to accomplish on behalf of both the army and navy and also of the training institutions which supplied recruits for both services. Happily or unhappily, as the case might be, there were no instances of direct litigation entered into by the Association to report but the case of *Robinson* v. *The Royal College of Veterinary Surgeons* and the notorious case of *Partridge* v. *The Medical Council* showed that the course of legal events was tending to establish their position under the Dentists Act, and especially had the latter case demonstrated that the Medical Council had not gone beyond its powers in its successful administration of the Act. The decisions of the judges of the lower courts and of the Court of Appeal in the case of Partridge all pointed to the successful administration of the Medical Council. In conclusion the report expressed the hope that the sure and steady progress characteristic of the Association hitherto in all its efforts for the promotion of the truest and best interests of the dental profession as a whole might equally well continue in the future until the desired goal of their legitimate ambition was reached.

The question of next year's meeting place was then discussed. Upon the reccommendation of the Board it was proposed and seconded that the gathering be held at Birmingham, and that Mr. Breward Neale be then nominated President Elect. Mr. Coffin read to the meeting an invitation to the Association, couched in the most cordial and generous terms, to hold its next meetings in Chicago upon the occasion of the great Exhibition. A discussion ensued, the result of which was that the resolution in favour of accepting the Birmingham invitation was adopted, and Mr. Neale was nominated President Elect for that gathering.

Mr. JAMES SMITH-TURNER, the retiring President delivered his valedictory address.

THE PRESIDENT'S VALEDICTORY ADDRESS.

Mr. SMITH-TURNER said, thirteen years ago the British Dental Association was called into existence by the force of circumstances ;

it was the outcome of a great social change which had been effected among a certain number of men calling themselves dentists. He said:—

"To say that our Association is the same now as it was at its inception would be to deceive ourselves. It, too, has partaken of the inevitable change which is really the essence of life. It has grown in numbers and in influence, and although there must naturally be a limit to its numerical growth, it is impossible to circumscribe its influence, either on ourselves or on the public at large. Whether this influence will be for good or for evil, whether it will redound to our credit or to our discredit, to our honour or to our disgrace, is a question of some moment to most of us, and a question more easily asked than answered.

"When our Association was first formed our executive was placed in office by virtue of their position as having been members of the Dental Reform Committee, which, after the passing of the Dentists' Act, had just performed the happy dispatch. It was considered that these gentlemen who had so far succeeded, would not only be willing, but anxious to conserve the fruits of their labour, and to form an association fitted for that object. When the bye-laws of the Association were formed, provision was made for the members of the executive retiring by rotation, and at this moment there are on the list of the executive, containing fifty-eight names, only five who were members of the Dental Reform Committee, and of these, two are honorary members of the Representative Board. From the commencement until now we have had three presidents of the Representative Board. This office is held for three years, and in one instance only has there been a re-election to that post—that was in the case of Sir John Tomes, a gentleman, I venture to say, whom we would only be too happy to elect again if we had the chance. Of the Representative Board as at present constituted, there are nineteen elected members from the provinces and twelve elected residents in London. There are also nineteen *ex officio* members from the provinces, while from London there are seven, so that the elected members numbering nineteen, and the *ex officio* members numbering nineteen from the provinces, gives a total of thirty-eight provincial members on the Board, while the *ex officio* and elected London members combined number twenty.

"When first I had an interview with Sir John Tomes regarding the desirability of forming an association, the idea had fully possessed his mind, and he was prepared to assist to the utmost in so doing, provided that our principles and methods should be strictly professional in their character. I believe we have hitherto been fairly faithful to these conditions, although perhaps not uniformly so. The lapses have, however, been very excusable, for youth is impatient, both in individuals and in associations, and well-meaning zeal should be readily condoned, even though it lead to temporary mischief. Nevertheless, we should be careful in following methods common in their nature and liable to abuse, methods which lend themselves to the charlatan as readily as to the honest and well-intentioned practitioner, and which may easily bear the imputation of interested motives. I believe that if such proceedings be sanctioned by us, the dignity and utility of our Association will be seriously impaired, at least in the direction in which it is most desirable that we should advance, and that any breath of popular applause which might be secured in one direction would never be balanced by the drawback in another. Again, it should be remembered that there is no finality in any such measures—not only must they be continuous in their application, but also in their development, and I believe that such development must be in a downward direction.

"A little knowledge is a dangerous thing."

" There is no more dangerous method of education than that of teaching people to imagine that in a jingle of words, and in a few isolated and dimly comprehended facts, they possess knowledge.

" With regard to the work of the past year and the affairs of the Association, it would be but a thrice-told tale were I to enter into this matter, after the lucid and able statements of our esteemed hon. Secretary and Treasurer. I again make my acknowledgments to you for the honour you have done me, and confess—what few of you may be inclined to believe—that from the commencement of my career amongst you to this its termination, I have been continually haunted by a deep sense of my many deficiencies. I hope that you will forgive them all as sincerely as I regret them deeply.

The address, which was received with applause, was followed by that of the incoming President, Mr. H. C. Quinby, L.D.S.I.

Inaugural Address by Mr. H. C. Quinby, L.D.S.I.

Mr. Quinby thanked the Association for the position in which they had placed him, and he did so, he said, all the more because he believed that while conferring the highest honour in their gift upon him they intended to reflect honour upon the type of American dentistry which was so well represented on this side of the Atlantic when he came to England early in the first decade of the second half of the century which was now drawing to a close. While there were some features in the present aspect of what was called American dentistry which American dentists were not proud of, he was sure there would be a general feeling of pride in the fact that on the first occasion on which the members of that Association had seen fit to elect an alien to occupy the presidential chair the choice had fallen on an American. Proceeding to point to some of the causes of the change that had taken place in the estimation in which American practice was held now compared with what it was forty years ago, he said he wished to speak of some of the phases of what he must call unprofessional conduct which had brought discredit upon American dentists at home and abroad—discredit which was deeply felt by all earnest, conscientious members of the profession in America. Before doing so, however, he desired to remind the meeting of the immense strides which English dentists had made in scientific conservative practice in the four decades to which he had alluded. There was no profession without its camp followers, a parasitic class which never by any chance reflected credit upon the professional prestige and dignity. That class would always be found hanging upon the rear of the main army, ready to pick up such crumbs of emolument as it might be able to seize, and would not have any scruples about carrying off the whole loaf if circumstances should permit. Living in a state of warfare against their own kind, as well as against the community, they naturally acquire a certain sharpness of intellect which, with a limited knowledge of technique, made it possible for them to impose upon the credulous and ignorant. Another class not much more creditable, having obtained what appeared to be a legal right to a place in the ranks, but lacking the true professional feeling, drifted away into practices which no man of standing would countenance. Some of that class had no capacity to govern themselves, and fell into the hands of those unscrupulous practitioners who were always on the watch for opportunities to make use of brains which had been able to gain a qualification but were not regulated by that moral rectitude which was so necessary to keep ability in straight paths. Such men soon lost their self-respect (which might, under wholesome direction, serve in the place of honourable principle) and rapidly degenerated into mere hacks in the team of quackery and charlatanism. There was also too much reason to think that a traffic in illegitimate diplomas had been recently revived, if indeed it had ever ceased to exist within the last thirty years, and those, which were purely a matter of purchase, without the too troublesome formality of examination, and which would be useless to a respectable practitioner, were made to pass as current coin for advertising purposes, where genuineness was not considered essential. It was also much to be regretted that the decision arrived at by the assembled faculties of the American dental colleges to the effect that no diplomas should be granted *in absentia* or without full compliance with the specified curriculum had not been so religiously adhered to as it might have been. It was reported that even an honorary degree granted by the oldest dental college in America (though why an honorary degree nobody could understand) had been used in the most unscrupulous manner for advertising purposes both in the public papers and by circular. The restrictions on registration should be such as to prevent the great mass of those men from practising on their own account in this country, but an evasion of that part of the Dentists Act by means of a system called "covering" had been for some time rather extensively carried on by certain men who were not eligible for membership of that Association. Under that system, which was manifestly contrary to the spirit of the Act, he was given to understand that numbers of young Americans possessing qualifications, or what appeared to be such, and which had been advertised as American qualifications, even giving the names of the persons supposed to be so qualified, were employed in dental practice, although none of them were registered, that want being covered by the sole registration of their employer or manager. Certainly none but those who were totally destitute of all the instinctive aspirations which elevated and ennobled the professional life could engage in a system of practice which involved advertising in the public newspapers. It was a well recognised principle in the liberal professions that advertising barred from membership of all professional societies and associations those who made use of such public announcement of themselves and the advantages they claimed to be able to give their patients or clients; in short, it simply meant professional ostracism, and it was quite time that the public should know that, and be able to judge whether men who had forfeited, or never obtained, professional recognition were to be trusted to perform professional duties. They could not, however, ignore the fact that at present the constant reiteration of a phrase or a statement did make an impression on a very credulous portion of the public, and it appeared to be just now the policy of those advertising institutions to keep a certain phrase constantly before the public eye, and to convey the idea that it was essentially an American class of work, whence arose the necessity that the employés should be Americans to give some appearance of consistency to the deception. He alluded to the stock phrase "crown, bar, and bridge work" as being the latest form of imposition upon that portion of the public which took its ideas of dentistry from advertisements. It was evidently intended to suggest a new development of dental science, by which any broken down and hopeless antiquities in the mouth, might be restored to permanent usefulness and beauty.—(Laughter.) They knew what utter nonsense that was; that in reality the phrase meant little that was new in dental practice. Another subject which had sorely exercised the minds of their American colleagues of late had been the ethical effect upon professional character and standing of the taking out of patents on ideas and methods which were purely professional in their application. He thought they might admit that the Americans were an inventive people, and that the great facilities given by the United States Government for the procuring of patent rights had done much to develop and stimulate that talent. It was the purpose of the statesmen who framed the patent laws that they should have the effect of encouraging a talent which the American colonists inherited from their British ancestors, but which had thriven well from the necessity which made men who were placed in new surroundings where additional labour was unattainable, think out and contrive ways and means to increase the capabilities of their own hands. In the case of surgical appliances there did not appear to have been to any noticeable extent, if at all, any reservation of rights by the inventor; the ideas, the methods, and the means for working them out had been freely and fully explained and illustrated in the professional journals, and the instrument makers had loyally exercised their best skill to perfect the instruments suggested by the surgeon, who in due time received and was satisfied with the approval and thanks of his colleagues. He was sorry to say, however, that that had not been the case in too many instances with the instruments and preparations for the use of their branch of surgery in America. In confirmation of that statement, he pointed to the buying of royalties upon the use of vulcanite for dental purposes in America, and to the selling, by men claiming a professional standing, of patents taken out by them to the large manufacturing companies who made and prepared instruments and materials for dental surgery. Those were, he believed, some of the reasons why the word American, used as a prefix to dentistry, constituted almost a term of reproach, for on this side of the Atlantic it had become, he was sorry to say, synonymous with the veriest chicanery and humbug ; but America had not ceased, and he hoped would never cease, to produce dentists that were honourable men, and who would cordially agree with the sentiments of a late letter in the *Times* by a distinguished member of that Association, who said : " Dentistry, like medicine and surgery, is catholic, and is practised by honest men for the public good, and therefore all its methods are made public to all members of the profession." A professional man, by the act of adopting a profession and qualifying himself to practise it waived the right, morally, to keep to himself for his own profit, any knowledge which would benefit his professional colleagues and help them to be more useful to their patients. He meant that if the idea of some new operation, or of some improved means of performing an operation, occurred to a man, it was only a matter of duty to make it known to his colleagues as soon as possible after verifying its value. They had what they considered to be more than their fair share of charlatanism in this country, but they could not be too thankful that they did not find it in their associations and scientific societies. Their numbers, actuated by the true spirit of professional life, were ready to give freely their contributions to professional knowledge, while fully conscience that, however much they might give, it was but an atom in comparison with the much they had received. So long as respect, esteem—they might say brotherhood—could be maintained in their Association and societies they might take it for granted that they should have no claims made by their own members for patents ; but they must take care that as few such claims as possible were established by those who chose to stand aloof from their Association and those others whose unprofessional practises rendered them ineligible for any association, in the broad sense of the word. Commenting upon the address of his predecessor in London last year, an exposition of the etiology of tooth deterioration, in which he entirely concurred, he said they went too far back in many things, and made the fathers accountable for their children's sins. But if they would correct the faulty structure of the children's teeth, if they would supply them with the proper materials in a form to be properly assimilated for the building up and nourishing of their teeth, they must go far back as the mothers, or rather they must teach the mothers of the coming generations how it must be done. The feeding must begin before the child was born, and it must continue with watchfulness and discriminating judgment through infancy, childhood, and adolescence. That that should be intelligently and effectively done it was necessary that every dentist should be a teacher, and endeavour, as far as possible, to disseminate information on all possible occasions. They were doubtless all aware (certainly those who had had much experience were) that attempting to teach men and women to do or to leave undone such things as might give trouble or interfere to some extent with their comforts or their pleasures would be a thankless task in most cases, but when they sowed good seed broadcast some of it would fall on good ground. There were many mothers who were so sincerely anxious for their children's good that they would listen to teaching about present care for the future good of their teeth, and would try to act upon the instruction which was given them, if they believed in the teacher, even when it did not in all respects conform with what was taught by their grandmothers. It was to those who wished to learn that they must look with some degree of hopefulness for a beginning of improvement in the structure and preservation of children's teeth, always remembering that in preserving these they were taking care of the adult teeth. Their work was to advise, to prevent, to repair, to restore. Immediate results were not what they should chiefly look for. The future effect of what they did in the mouth should be the idea ever foremost in their minds.—(Applause.)

The thanks of the Association were accorded to the President for his address.

On August 12th, after the reception of the Report of the Benevolent Fund the members of the Association gathered in the Chemical Theatre. Mr. H. C. Quinby, the President, occupied the Chair.

MR. H. J. MUMMERY (London) exhibited, by aid of the magic lantern, a series of microscopical specimens of the progress of various diseases upon the teeth. He was accorded a hearty vote of thanks for his contribution.

Discussion upon the Desirability of Extraction of the Six-year-old Molar.

The Chairman, in introducing a discussion on "The Desirability of Extraction of the Six-year-old Molar," said the subject was of the greatest interest and importance in the treatment of youthful mouths. The subject might be considered generally as the treatment of irregularities and overcrowding of the human teeth. Their special point for discussion, however, was the tendency of overcrowding to prevent the destructive effects of caries, whether it might be justifiable as a conservative measure in cases where they saw indications of danger to the youthful denture from this cause to remove an upper and a lower tooth from each side of the mouth with a view to the giving of space to the anterior teeth, permitting them to settle, and as nearly as possible, isolate themselves, thereby preventing the inception of carious disease in such teeth as had not already been attacked ; and if such a measure was justifiable, which teeth should be selected for extraction so as to give the necessary relief, and when would be the best time for extracting to secure the best results for the future of the mouth.

Dr. I. B. Davenport (Paris) said it was deplorable to realise how little was known of the true function of the organs of mastication. Men constantly attempted the treatment of cases of irregularity with their ideas of where the imperfection lay, and of what would constitute perfection quite reversed, and it was not surprising that disappointment resulted. His researches showed him that it was at first necessary to demonstrate so obvious a fact as that lateral contact of the teeth was an essential factor in a normal arch, and that good arches could not be disturbed without injury. This he was obliged to do because thousands of dentists the world over were mutilating the teeth both by extraction and cutting between them, on the theory that "contact is dangerous," and who did not realise the consequences of broken arches, and even to-day that fact was not enough appreciated. Good dental arches possessed such an arrangement as to be mutually self-supporting, thus tending to their own preservation and highest functional power. If a portion of the dental arches was removed, they fell together, and the new arches thus formed were apt to be unstable for want of proper support, and often pushed out into irregular shapes at the points of feeble resistance. When the arches fell together after extraction the roots of the teeth moved less than the crowns, and so the relations of the grinding surfaces were disturbed, and much of the interlocking support of the masticating surface was lost, and a large space was left which required much diminution in the size of the arch to obliterate. When the jaws were at rest there ought to be broad and firm contact between the two arches all round, and during any masticating movement there should be extensive progressive contact, as the articulation moved from one place to another. He had been criticised for insisting upon the application of knowledge of perfect or good arches in considering the results of treatment of imperfect arches, and it had been claimed that a correct judgment of a case could be reached only by comparison of the jaws before and after extraction. No source of knowledge could be despised, and he was as much in favour of employing that method of research as anybody could be. Much might be learned by comparing results with previous conditions, but the value of an opinion by such comparison as to whether improvement or injury had been done, as well as the ability to detect them, must inevitably depend upon the knowledge they possessed of what constituted a perfect denture. There were elements of error in the comparison of results before and after extraction. What might appear to be a better result at one period might be bad later, after the unbalanced forces had had a longer time to exert their influences. Take the slowly developing child that seemed to be "all teeth," a comparison of photographs years after extraction with one showing the previous condition of the child would be valueless as indicative of the degree of improvement of the features. Such were the cases with which some dentists delighted to dabble. The parents thought "the girl horrid," and "something must be done" they said. The too-supine dentist extracted the teeth, and after a time compared the two conditions as shown by models, and parents, dentist and all were happy. To contrast the actual results obtained with models of the past conditions without taking cognisance of the possible and not improbably changed condition produced by time alone, was, in his opinion, unscientific at least. (Hear, hear.)

Mr. G. G. Campion (Manchester) said they would find in the new books which had been prepared for the use of the School Investigation Committee, that carious teeth were classed into two categories. There were carious saveable teeth, and carious unsaveable teeth, and among the latter were a large number of six-year-old molars. When it was proposed to illustrate the results of the extraction of the six-year-old molar it seemed to him and others that it would be a useful thing to have some models showing the results of extraction of those teeth at different times, so that they might find out under what conditions of the development of the denture it was best to remove those carious unsaveable molars in order to produce the best possible results in after years. In photographs of models which had been taken in cases where the six-year-old molars had been removed, what he thought they would notice was that where the lower molar alone had been removed and the upper left the result upon articulation was very bad, and that where the six-year-old molars above and below had been taken out the result was very much better. In future cases, dentists ought to make a point of taking models before molars were removed as well as afterwards. By such a course they might gather a large amount of evidence upon the point which would be of great practical utility.

Mr. G. Cunningham (Cambridge) said that in the university town where he lived he had ample opportunity of seeing how great was the neglect of the teeth among the young men of the country. He quite agreed with previous speakers as to the necessity of models being taken to establish the desirableness or otherwise of removing the six-year-old molars, in cases of irregularity, and he produced a number of highly ingenious models which he had himself made.

Mr. C. S. Tomes (London) said the dental arch theory was untenable in the present case, because the key stone of an arch was not in its side. It was the side of the denture where the force of mastication came and they were talking outside the mark when they talked about the spring of the arch. Formerly he used to take out the six-year-old molars in cases of irregularity, but now he would rather take out a sound bicuspid than a somewhat damaged six-year-old molar.

Mr. W. B. Pearsall (Dublin) said he looked upon the man who extracted six-year-old molars, if they were sound, as a criminal. He held that a bicuspid could much better be sacrificed.

Mr. Mundell said he had recently examined 160 boys in an important school and had found the most of them would have been benefitted by the extraction of the six-year-old molar. Much depended upon the constitution of the teeth. If the teeth were weak, he held that they should extract the molars so as to allow the bicuspids to be useful in after life.

Mr. F. Rose and Mr. Storer Bennett also spoke.

The CHAIRMAN, in bringing the discussion to a close, said the great end every dentist should aim at was the preservation of the greatest number of teeth in the soundest possible condition.

THE DEMONSTRATIONS AT MANCHESTER.

On Saturday morning, August 13th, the following demonstrations were given.

Dr. HEWITT showed and explained "a New and Portable apparatus for the administration of Oxygen with Nitrous Oxide Gas" which he has found to give the best results of the many he has tried. Much interest was excited both by the mechanism and the four or five cases in which Dr. Hewitt afterwards produced anæsthesia by its use.

Mr. ROWELL read a short paper on "Some Points in the administration of Nitrous Oxide Gas," in which he mainly dealt with the question of the administration of small quantities of air with the gas as a means of obtaining a longer period of anæsthesia. After the paper he demonstrated the working of this method on four or five patients.

Mr. S. A. COXON next showed an "Apparatus for the prolongation of the anæsthetic effects of Nitrous Oxide Gas" by which in several cases he continued the administration while the operation was proceeding.

Mr. A. WILSON demonstrated "On Nitrous Oxide Gas and Ether" with a few patients, using a Clover's chamber between the stop-cock and face-piece of his gas apparatus.

There was a good audience throughout, and one felt that the subject of anæsthetics had at any rate obtained its share of attention.

Mr. ERNEST BRIAULT demonstrated a "Gold Collar Crown with a Porcelain Face," adapting one to an upper lateral incisor, the root of which had been previously prepared. The operation occupied about two hours. He had on his table a model illustrating each step in the process from the shaping of the roots to the fixing of the completed crown.

Mr. BALDWIN (London) demonstrated the use of gold and tin combined, especially for interstitial cavities in back teeth. He built up a contour filling in a cavity involving the posterior and masticating surface in a second lower bicuspid entirely with mixture of tin and gold. The insertion of the filling occupied ten minutes. The bulk of the filling would correspond about to a ten-grain gold filling. Mr. Baldwin said that in most cases of this kind he would work a large proportion of pure gold, either non-cohesive or cohesive, into the uppermost part of the filling, so that when completed it would look very like an all-gold filling. The advantages of tin and gold over pure gold were that it was much quicker to insert, much easier to work, more easily made water-tight fillings, was a much lower conductor of heat and cold, and after six months or a year's wear it became consolidated into a single hard mass which resisted the wear and tear of mastication as well as an amalgam while it had the great advantages over amalgam in not shrinking at all, and not discolouring the tooth. Stress was laid on the kind of tin and gold: the operator recommending White's "extra tough" tin foil, and Abbey's old-fashioned non-cohesive gold foil, both about No. 4. One sheet of tin was placed between two sheets of gold. The three sheets were folded together twice then strips cut off the desired width with scissors. For large work the strips were to be rolled on a brooch into cylinders or wrapped into flat masses by the fingers. The hardening change was thought to be due to oxidation of the tin by electric action going on between the two metals; as no change took place out of the mouth. Some scraps of an old tin and gold filling were handed round for inspection and were found to be quite hard like amalgam and coherent. Mr. Baldwin referred to his article on tin and gold in last June's issue of the DENTAL RECORD where the merits of the material and the manner of using it were set forth.

Mr. BROUGHTON, of Eccles, gives the appended report of his demonstration at the Manchester meeting. The following were his exhibits and demonstrations.

Charging accumulator with gravity batteries, Cutriss'.

Ditto with Cutriss' ½-horse gas engine and dynamo, both of which were very efficient and successful.

Mengel and Co.'s electrical outfit, comprising burring engine mallet, hot-air syringe, lamp cautery. These were beautiful and small in compass, and excited a good deal of notice.

Workroom lathe and motor, regulating driver from a four cell accumulator.

Heating water by electricity.

During the morning he gave for the benefit of the ladies a demonstration of cooking by electricity, also of a heater for curling tongs, and flat iron heated by electric current.

Bells, gongs and trumpets, for signalling, telephones for communication, and electrically propelled fans for ventilation, etc.

Boyd Wallis switch board and resistance.

Cutriss ditto, both of which were used to reduce the current supplied by college.

Electric Lamps.—Broughton's dental and surgical frontal lamps, requiring only four volts or two cells for working.

The Dental Manufacturing Co.'s bracket and lamp, eight volts and Welschow electric fifty-volt lamp.

The northernal lamp six volts.

The college authorities kindly placed at his disposal the whole of their electrical plant, enabling him to perform the whole of his experiments without a failure.

Mr. W. H. Dolamore prepared and fixed a gold crown on a badly decayed lower molar tooth. The crown was made to the tooth in the mouth, the operator explaining that he preferred this to working to a model.

Mr. I. Hooten, L.D.S.I., demonstrated his "New Method of Moulding and Working Continous Gum." The appliance was designed with the object of moulding the teeth and gum substance in a manner universally applicable to any form of teeth or gum, and with a series of matrices of different types of teeth it was possible to adapt the one to the other by one process. The process was applicable to gold plates and to vulcanite, without need of platinum ; (1) The moulds or matrices are made by mounting sets of teeth of various types and sizes in wax ; seven or eight types being sufficient for ordinary work. These wax patterns are not fitted to any gum outline, but are contoured to the form of an upper or lower maxilla, and are made flat on what would be the gum surface ; in other respects they are exactly what a set of artificial teeth would be. These form the "male" part of the mould, which is cast in plaster of Paris in two parts. These are trimmed into shape so as to be reproduced in brass or gun-metal, so as to be clamped together by pins, and on the upper surface a metal plate is cast like the lid of a vulcanising flask, except that it has three countersunk holes and a central hole through which a screw passes, and on this a winged nut works which clamps the whole. This apparatus is thus worked: a universal articulator is prepared, and into it is fixed a zinc model of the case to be treated; on this is placed a wax bite of the dimensions of the required plate. A soft brass plate is adapted around outside of this, being moulded to take the external outline. The wax bite is removed, and a wax counterpart of the inside of the brass mould made. This is adapted to the zinc model by heating. Before the zinc is heated the articulator is removed, but it has to be replaced before the wax counterpart is run down. The wax bite is thus outlined with teeth and gums, but with its gum surface the counterpart of the zinc model, and it is then returned to the brass mould, and fusible metal melted and poured in through one of the three holes in the lid which are counter-sunk. The matrix is quickly opened by withdrawing the pins, and the wax removed. It is necessary that parallel holes be drilled into the lower part of the matrix for the pins. Slits are also sawn in the mould behind the canines on each side, so that strips of thin brass can be slipped in to divide the mould into three parts. Into the pin holes are inserted pieces of steel knitting pins of pivot wire gauge, and on them are fitted platinum tubes wherewith to line the pinholes in the gum blocks. A plate of copper is put under the matrix to prevent dropping out of the pins. The mould is now clamped, with the exception of the lid, the "body" being packed in moist, then the lid is added and hammered down and screwed home. The mould is heated over gas until the fusible metal runs out; next, the outer part of the mould and the lid are removed, and the blocks trimmed and removed; the gum surface is then painted and the teeth tinted. The blocks having been dried for half an hour, are then placed in the muffle, which should not be closed until the oil and starch are driven off.

If it be desired to use teeth of special shape or colour they are placed in the matrix, and the steel pins and platinum tubes are placed in position as described, pressing the gum body over them and fitting to the gums with the fusible metal mould just the same as when forming the gums and teeth in one block. On being delivered from the matrix the work will be found to need very little trimming round the teeth, and the gums will be much more solid and less liable to crack than when packed in the ordinary way. Mr. Hooten stated he had produced a very beautiful gum fusing below 18 ct. gold and specially adapted for use in the later process. This he fuses in 15 minutes starting cold in a gas furnace.

Mr. WHITTAKER (Manchester) demonstrated "Porcelain Rod Inlays." In Mr. Whittaker's inlay, the tooth operated upon was a right upper canine with decay on the labial surface. He gave the following directions :—First clear out decay with ordinary burs and excavators, then make cavity perfectly cylindrical with an inlay bur of required size, (there are nine sizes used), also with this inlay bur, cut a hole in a narrow piece of ivory or tooth brush handle for guide for size of porcelain rod, select rod of requisite colour for tooth under treatment, tapering rods are far preferable to parallel ones. Cut a piece off the rod a little larger in diameter than the cavity. This was easily done by placing the tapering rod through the gauge made in the narrow piece of ivory, the porcelain rod is now fixed into a port polisher with shellac, and trued up whilst warm. The port polisher is now placed in the engine, and the rod ground down to the diameter desired, by revolving it against a corundum stone or diamond disc. When the rod will just enter the cavity it is ground home with the engine, wetting frequently to avoid heating, also the hand piece must be held very steady to keep it perfectly cylindrical, no grip is required as the roughened surface of the rod will cut its way into the tooth When it is ground home, remove from the handpiece and mark depth of rod in cavity with pencil, allowing plenty to finish, weaken the rod at this mark with a diamond disc. You now dry out cavity, place in some fine grain cement (such as Marfil), also put a little on end of rod and while held in port polisher, turn it into cavity with the fingers. making sure it gets well home. A little lateral pressure will then snap the rod where it was marked and weakened, and when the cement has set, it can be cut down with corundum wheels and polished,

Mr. E. LLOYD-WILLIAMS (London) demonstrated a simple method of making hollow chambers in vulcanite dentures where large portions of alveolar tissue are missing, as a consequence of absorption, disease or surgical operation ; the very obvious advantages being *lightness and immunity from porosity.* The case selected for illustration was that of a man who, some four years ago, had plugged the socket of an upper molar after extraction, on account of the entrance of fluids into the antrum. The plug had gradually been enlarged to meet the exigencies of the case—from a lay point of view—until the extensive absorption produced had effected not only a huge opening in the alveolus, but also into the nose. A hollow plate acting as an obturator, had been worn by the patient ever since.

A duplicate case, ready flasked, was shown, and the method of packing demonstrated. The idea is not a new one, and is that adopted in the construction of the *Suersen* obturator. The case having been built up solidly in wax, is flasked in the old-fashioned two-part way. Having been boiled out, the area for the hollow box is carefully marked on the plaster with a pencil, care being taken in estimating the line of junction of the *box* and its *lid*. The box surface is now painted with a solution of the rubber to be used in methylated chloroform, and covered with a single thickness of rubber, the seams being carefully sealed with a hot packer, and—for further security—painted with the solution. The edges of the box are left sufficiently high to impinge on the lid when the flask is closed. The lid portion is provided for by applying a single layer of rubber to the marked area by means of the solution. Before closing the flask two or three drops of water are placed in the open box. Mr. Lloyd-Williams strongly advocates the use of a vulcanizer in which the flasks can be closed when the rubber has attained a sufficiently soft condition, without danger of bruising the plaster investment.

It was pointed out that this method of hollowing plates may be adopted in all cases of extreme absorption, and teeth mounted in the front wall of the box, provided that the *three-part* way of flasking be adopted.

Demonstrations on Continuous Gum Work were given by Mr. Harry Rose. Cases and models were shown illustrating the various stages of continuous gum work.

I. Plaster model covered with a layer of thin rubber, ready to be cast in sand to obtain a die and counter. To prevent the rubber from becoming soiled during the process, it should be covered with tissue paper or tin foil.

II. Represented platinum plate with surface roughened by means of a triangular graver, and a row of holes drilled along its posterior border to afford attachment to the rubber lining. Prior to placing on the model and covering with mineral compound the plate should be made warm over a spirit lamp and have a layer of gum enamel painted on it, this when fused attaches itself to the plate and also helps to secure the mineral.

III. Illustrated the method of making the plaster sections.

It should be noticed that the sections covering the front of the case do not come quite up to the crowns or points of the teeth, and the crown section should be strengthened by having a piece of wire sunk in the plaster at the time of moulding.

IV. Showed the method of lining the sections with tissue paper.

Pieces of tissue paper roughly cut out to the required form are first prepared. The sections are painted with a little vaseline, then one of the pieces of paper is taken up by means of a pair of tweezers and dipped into distilled water, and then laid in position in the concavity representing teeth and gum. It is then pressed into place by means of a bushy camel's-hair pencil.

It does not matter if the tissue paper overlaps the sections at the sides or over the edge of gum, but care must be taken that it does not come up to the points of teeth, as the crown section would be likely to press it down and so prevent the teeth from going quite home during the process of moulding. When ready the sections may be adjusted to the model and fastened together with an elastic band, thus forming a mould ready for the packing in of the mineral compound.

V. An upper facing of fourteen teeth such as would be moulded in the sections and model illustrated in No. 4. It has been fired once in order to prevent breakage, as the unbaked mineral is somewhat fragile. The platinum plate on which the facing has been moulded has had holes drilled along to posterior border for the attachment of wire loops.

VI. An upper facing on a No. 4 soft platinum plate, this shows the latest and most simple form of attachment for the rubber lining. This case has also been fired once and with No. 5 is a very good example of the unshrinkable nature of the mineral compound. Both these cases are ready for the gum enamel.

VII. A complete upper facing with detachable teeth. The only difference in the moulding of this case and the two preceeding ones is that prior to insertion in the mineral compound the necks of teeth are rubbed with vaseline, this permits of their removal when the mineral hardens. Thus the facing is fired without the teeth, and to aid in preserving the sharpness of the sockets they are filled with finely powdered silex. In this style of work any kind of tooth can be used, and if a fracture occurs it can be repaired as simply as an ordinary vulcanite denture.

VIII. A lower case set up in wax with sections to show the method of applying swivels to a mineral block at the time of moulding.

IX. & X. Practical gum blocks to attach to a plate by means of vulcanite.

XI. A moulded mineral block of fourteen teeth, with countersunk holes drilled in base for the attachment of the vulcanite lining. A piece of platinum wire pivot size was inserted in this case as a strengthener at the time of moulding, and extends from the second bicuspid on each side.

In the Microscopical Section, Mr. J. W. Dunkerley demonstrated "Hard Section Cutting." He first cut sections from off the tooth by means of a copper disc fitted in the ordinary manner on to a dental lathe, and revolving in a tin trough which contains water and fine corundum powder and these are ground down on a thick copper wheel, charged as in one. They are then polished on one surface on soft stone (Water of Ayr) under running water, and the polished surface secured on to a glass slip by means of thick Canada balsam. The section is then ground down as in (2) until thin enough to see structure, and then polished until all details are seen under microscope. Mount in Canada balsam without drying.

Mr. Meller demonstrated "Injecting" an Animal previous to Section Cutting. His directions are :—First kill the animal with cyanide of potassium solution, then immediately insert and tie on a canula into the aorta and slit the left ventrical. Through the canula wash out all the blood in the vessels by injecting warm salt solution, and when the salt solution passes out clear, proceed to inject the coloured mass; after completion allow this to solidify by laying the body aside a short time. Preserve the tissues in spirit or other preservative.

Mr. A. Hopewell Smith gave a description of his process of "Preparing Sections of Teeth," of which the following (*See* "*Transactions of Odontological Society*," *November*, 1891) is an outline. 1. Immerse a newly extracted tooth in Müller's fluid for three to four weeks, and remove to spir. vini. rect. for ten to twenty days. Alcohol (84 per cent) may be used instead of Müller's fluid. 2. Remove, wash in water, and seal up apical foramen and soft parts with collodion. 3. Place tooth in 15 c.c. of following solution :—HCl 12 parts (pure). HNO_3, 30 part (non-fuming). Aq. dest., 108 parts. Take 12 c.c. of 10 per cent. solution of HCl and at end of fifteen hours add 1·5 c.c. of HNO_3 and at end of forty-eight hours add 1·5 c.c. of HNO_3 from commencement of immersion in acid solution. 4. Remove tooth at end of seventy-five to eighty hours and wash in a solution of lithium carb. (5 grs. to an ounce) for half-an-hour. Wash thoroughly with distilled water. 5. Divide tooth by razor into several pieces and wash again in water. Place each in gum mucilage (B.P.) Leave in mucilage twelve to fifteen hours or more. 6. Transfer to stage of freezing microtome, cut, wash sections, and stain with orange rubine, or gold chloride, or borax-carmine, or Weigert's solutions. 7. Dehydrate in absolute alcohol three minutes, "clear" in cedar oil one and a-half minutes' and mount in Canada balsam.

The Festivities.

Among the attractions presented by the meeting which were of a less severe nature than those noticed above, we may briefly mention a Garden Party at Peel Park. In the afternoon of Thursday, Aug. 11th, the members of the association attended a garden party at Peel Park on the invitation of the Mayor of Salford (Mr. Alderman P. Keevney.) About 300 ladies and gentlemen were received by the Mayor and Mayoress (Miss Keevney) in one of the rooms of the museum. The Langworthy Galleries attracted many visitors, and the other interesting objects in the building were also inspected with evident pleasure. The weather proved favourable for promenading in the Park, and to add to the enjoyment of the visitors the Police Band performed selections of music under the direction of Sergeant Millman. A hearty welcome was extended to the guests by the Mayor, whose hospitality was cordially acknowledged by Mr. C. S. Tomes on behalf of the association. Refreshments were served to the visitors in a portion of the Langworthy wing. Before separating the party was photographed in the grounds fronting the museum building.

Conversazione at Owen's College.

In the evening a conversazione was held at Owen's College, and was largely attended. The guests were received by Mr. H. C. Quinby (president of the association), Mr. W. E. Harding (president of the Midland Branch), Mr. P. Headridge (president of the Manchester Odontological Society) and Mr. Henry Campion (chairman of the Reception Committee). The Geological Museum and the Mineralogical Museum, on the ground floor, and the Geological collection, the Zoological collection and the Botanical Museum, on the first floor with the Flinders-Petrie collection of Egyptian antiquities were inspected with much interest. In the Beyer Biological Lecture Theatre, Mr. J. W. Wade (president of the Manchester Amateur

Photographic Society) gave a special limelight exhibition of photographs embracing views in North Wales, and life in the Manchester streets and theatres. In the Council room there was a special display of telephones by Mr. J. C. Chambers of ths National Telephone Company, and a telephonic concert was transmitted from the residence of Mr. G. W. Naylor, Stafford, and also selections from various provincial theatres. Many scientific instruments of great interest were on view in the Zoological Laboratory. Refreshments were supplied in the Botanical Laboratory. The enjoyment of the company was much enhanced by the tasteful performances of Messrs. Forsyth Brothers' string band.

On Friday, 12th, during the afternoon there was an excursion to the Ship Canal works as far as Barton, and a number of members and their lady friends went to inspect Messrs. R. Haworth & Co.'s cotton mills, in Ordsal Lane, Salford, intending to visit "Old America" at Old Trafford afterwards.

Dinner at the Grand Hotel.

The Annual Dinner of the British Dental Association was held in the evening at the Grand Hotel, Manchester, and was attended by about 200 members. The chair was occupied by Mr. H. C. Quinby, of Liverpool, the President of the Association. After the tables had been cleared, the President read letters regretting absence from the Mayors of Manchester and Salford, and Mr. B. Neale, of Birmingham, the President-elect. The President then gave the toast of "The Queen," which was received with musical honours. This was followed with the toast of "The Army, Navy, and Reserve Forces," submitted by the President, and replied to by Lieut.-Colonel Rogers, who alluded with pleasure to the fact that the Government had at last seen the desirability of increasing the strength of the Navy. The naval manœuvres which were now going on must, he said, be of the greatest practical service both to officers and men. Our Navy was our first defence around this pleasant little island, and it was absolutely necessary that we should spare nothing to make it, as it now stood, the first navy of the world. (Loud applause.) Mr. Rushton Parker, of Liverpool, next gave the sentiment, "The British Dental Association," and in doing so expressed pleasure in proposing the toast. Dentists and medical men, in his opinion, were engaged in similar work, and they were comrades as well as professional men. (Hear, hear.) Mr. J. Smith-Turner (the ex-president) responded in a felicitous speech, observing that they now had an Act of Parliament constituting them a legal profession, and they wished to take that position, not because that Act of Parliament was passed, but because they wished to educate themselves in such a manner as to entitle them to that legal position. (Hear, hear). He denied that they assumed the character of a trades union ; all they asked was that when parents sent students to enter their profession those students should be educated, and should follow the course of study prescribed for them, which would enable them to serve the public skilfully and at the same time act as gentlemen, (Hear, hear.) Mr. C. S. Tomes (London) followed with the toast of "Owen's College," and thanked the authorities of that institution for the hospitality accorded to the association. Professor Leech responded, and traced the progress of the college during the period he had been connected with it. The college, he said, paid special regard to departments bearing on practical work, and he mentioned that the dental department had grown and had become a very important part of the college. (Applause.) Mr. Morton Smale (London) gave the toast of "The Medical Schools," which was acknowledged by Mr. Edward Lund, Professor J. Dreschfeld, and Mr. Pridgin Teale. The remaining toasts were "Our Guests," and "The President." Messrs. Forsyth Bros.' band provided an interesting programme of music, and vocal selections were also creditably given by Miss Mabel Berry, Mr. Seymour Jackson, Mr. Kinnell, and Miss F. Daly. Simultaneously with the banquet, Mrs. H. C. Quinby (the wife of the president) held a ladies' reception in a room in the hotel, and in the course of the evening was presented with a beautiful bouquet in a silver-gilt holder. The ladies that attended the reception were also the recipients of sprays of flowers from the members of the Association.

Royal College of Surgeons, Edinburgh.

The following gentlemen having passed the requisite Examinations were admitted Licentiates in Dental Surgery :—Thomas Nash, Edinburgh, Henry Alexander Matheson, Edinburgh, John Malcolm, Edinburgh, and James Joshua Martin, Bradford.

Royal College of Surgeons in Ireland.

ELECTION OF DENTAL EXAMINERS.

At a meeting of the President, Vice-President, and Council held on Thursday, the 4th August, the following were elected Dental Examiners :—John Barton, F.R.C.S. ; Henry Gregg Sherlock, F.R.C.S., L.D.S. ; William Stoker, F.R.C.S. ; Thomas Studley, L.D.S. ; Charles Wall, L.D.S. ; Montgomery A. Ward, F.R.C.S. The Examinations are held in November, February and May.

THE DENTAL RECORD, LONDON: SEPT. 1, 1892.

THE ADMISSION OF WOMEN TO THE BRITISH MEDICAL ASSOCIATION.

ONE seldom realises how rapidly one travels. It is common enough to meet a lady who hurrying along bearing a small black bag, may be a lady doctor, but one doesn't really believe she is one because one doesn't really think of a woman as a doctor. Yet patient, zealous, earnest women have there been in our midst for many years now, who are actually toiling as general practitioners and so making their living and that of those who are dependent on them. These women may go to Cambridge or Oxford and may in the open field of competition beat all male competitors in the "schools" and yet their guerdon is only a nominal honour, no class or tripos place for them. They would have been "senior wrangler" or "double first" when such things were if they had been a man, but being only a woman they got nothing. This is owing to man being the superior being! In London things are different, and one may jostle a B.A., an M.D., or a D.Sc. in the garb and habiliment of woman and think her only "a domesticated pet." The medical women were anxious to join their male colleagues in conclave, but a kind of "oranges and lemons game" was played and the gentlemen losing their nerve when the question came up after first admitting one lady—a distinguished chirurgical lady—refused to admit her following. For many years the Association has been pretty catholic as regards the tag rag and bob tail of its male members, admitting those who apply without asking unpleasant questions, but sternly repulsing the ladies. Indeed until the recent annual general meeting, it was emphatically ruled "No ladies need apply." This is now reversed, and the women who hold registrable diplomas will be entitled to membership when certain formalities are gone through, for a barrier of "red tape" still exists. The arguments urged against the admission of women have always been "hard to be understanded" but the one argument, that the men object to the increased competition by an influx of hardworking, intelligent women, which one might have thought worth considering, was not trotted out. The gallant and chivalrous medicoes would have excluded women for the sake of the fair ones themselves, on scores of injury to their health, indelicacy, awkwardness of consultation ! The sympathetic disinterestedness of these gentlemen is a beautiful and touching thing to see, when the ladies go helter skelter into the Tom Tidler's ground of practice, picking up gold and silver. We have ladies on the dental register, but the B.D.A. have not, we believe, ever taken any particular stand about their admission into its hospitable brotherhood.

STUDENTS' SUPPLEMENT.

Registration of Dental Students.

The registration of dental students shall be carried on at the Medical Council Office, 299, Oxford Street, W.

Every dental student shall be registered in the manner hereinafter prescribed by the General Medical Council.

No dental student shall be registered until he has passed a preliminary examination, as required by the general Medical Council,* and has produced evidence that he has commenced medical study.

The commencement of the course of professional study recognised by any of the qualifying bodies shall not be reckoned as dating earlier than fifteen days before the date of registration.

Students who commenced their professional education by apprenticeship to dentists entitled to be registered, or by attendance upon professional lectures, before July 22nd, 1878 (when dental education became compulsory), shall not be required to produce evidence of having passed a preliminary education.

Candidates for a diploma in dental surgery shall produce certificates of having been engaged during four years in professional studies, and of having received three years' instruction in mechanical dentistry from a registered practitioner.

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* Exception may be made in the case of a student from any Indian, Colonial, or foreign university or college, who shall have passed the matriculation or other equivalent examination of his university or college, provided such examination fairly represents a standard of general education equivalent to that required in this country.

One year's *bonâ fide* apprenticeship with a registered dental practitioner, after being registered as a dental student, may be counted as one of the four years of professional study.

The three years of instruction in mechanical dentistry, or any part of them, may be taken by the dental student either before or after his registration as a student; but no year of such mechanical instruction shall be counted as one of the four years of professional study unless taken after registration.

Forms of registration may be obtained at the office of the General Medical Council. No fee is required for registration as a student

PRELIMINARY EDUCATION.*

REGULATIONS OF GENERAL MEDICAL COUNCIL.

No person shall be allowed to be registered as a medical or a dental student unless he shall have previously passed (at one or more examinations) a preliminary examination in the subjects of General Education as specified in the following List:—

1. English Language, including Grammar and Composition;
2. Latin, including Grammar, Translation from specified authors, and Translation of easy passages not taken from such authors;
3. Mathematics, comprising (α) Arithmetic, (β) Algebra, including Simple Equations, (γ) Geometry, including the subject matter of the first three books of Euclid, with easy Deductions;
4. One of the following optional subjects;
   (α) Greek; (β) French; (γ) German; (δ) Italian; (ϵ) any other Modern Language; (ζ) Logic.

The Council will not, in future, accept any certificate of pass in preliminary examination in general education unless the whole of the subjects included in the preliminary examination required by the Council for Registration for Medical Students have been passed at the same time, but this rule does not apply to those who, previous to January, 1892, have passed a part of any preliminary examination recognised by the Council.

List of Examining Bodies whose Examinations fulfil the conditions of the Medical Council as regards preliminary education, and entitle to registration as medical or dental student.

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* These regulations came into force January 1st, 1892, until then "Mechanics" was a compulsory subject (see *Dental Record*, September, 1890.)

I.—UNIVERSITIES IN THE UNITED KINGDOM.

Oxford or Cambridge :—

(*a*.) Junior Local Examinations; Certificate to include Latin and Mathematics, and also one of the following optional subjects, Greek, French, German.

(*b*.) Senior Local Examinations; Certificate to include Latin and Mathematics.

(*c*.) Responsions,(Oxon.) Higher Local Examinations, (Cantab.)

(*d*.) Moderations, (Oxon.) Previous Examinations. (Cantab.)

(*e*.) Examination for a Degree in Arts.

London :—

(*a*.) Matriculation Examination.

(*b*.) Preliminary Scientific (M.B.) Examination.

(*c*.) Examination for Degree in Arts or Science.

Durham :—

(*a*.) Examination for Certificate of Proficiency.

(*b*.) Examination for Students at the end of their first year.

(*c*.) Examination for a Degree in Arts.

Victoria University :—

(*a*.) Preliminary Examination; Latin to be one of the subjects.

(*b*.) Entrance Examination in Arts, to include all the subjects required.

Universities of Edinburgh, Aberdeen, Glasgow, St. Andrews :—

(*a*.) Local Examination (Junior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects, Greek, French, German, (or all subjects required.)

(*b*.) Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects, Greek, French, German.

(*c*.) Preliminary Examination for Graduation in Science (Edinburgh) or Medicine and Surgery.

(*d*.) Examination for a Degree in Arts.

University of Dublin :—

(*a*.) Public Entrance Examination.

(*b*.) General Examination at end of Senior Freshman year.

(*c*.) Examination for a Degree in Arts.

Queen's University in Ireland :—

(*a*.) Local Examinations for men and women; Certificate to include all the subjects required by the General Medical Council.

(*b.*) Entrance or Matriculation Examination.
(*c.*) Previous Examination for B.A. Degree.
(*d.*) Examination for a Degree in Arts.

Royal University of Ireland :—Matriculation Examination.

Oxford and Cambridge Schools' Examination Boards :—

Certificate to include the following subjects :—An adequate knowledge of English Grammar and Orthography, as shown in the course of the Examination, to the satisfaction of the Examiners, being held as conforming to the requirements of the Medical Council in regard to those subjects :—

(*a.*) Arithmetic, including Vulgar and Decimal Fractions.
(*b.*) Algebra, including Simple Equations.
(*c.*) Geometry, including the first two books of Euclid.
(*d.*) Latin, including Translation and Grammar.
(*e.*) Also one of these optional subjects :—Greek, French, German.

II.—Other Bodies named in Schedule (a) to the Medical Act.

Apothecaries' Society of London :—Examination in Arts.

Royal Colleges of Physicians and Surgeons of Edinburgh :—
Preliminary (combined) Examination in General Education.

Faculty of Physicians and Surgeons of Glasgow :—
Preliminary Examination in General Education.

Royal College of Surgeons in Ireland :—
Preliminary Examination ; Certificate to include Mathematics.

III.—Examining Bodies in the United Kingdom, not included in Schedule (a) to the Medical Act (1858).

College of Preceptors :—Examination for a First Class Certificate, or Second Class Certificate of First or Second Division, Algebra, Geometry, Latin, and a Modern Language, having been taken.

Queen's College, Belfast ; Queen's College, Cork ; Queen's College, Galway :—Matriculation.

Intermediate Education Board of Ireland :—

Junior Grade Examination Middle Grade Examination Senior Grade Examination	Certificate in each case to include all the subjects required.

St. David's College, Lampeter :—
Responsions Examinations, to include all subjects required.

Educational Institute of Scotland :—
Preliminary Medical Examination.

IV.—Certain Indian, Colonial and Foreign Universities and Colleges.

REGULATIONS OF THE VARIOUS EXAMINING BODIES FOR THE DIPLOMA IN DENTAL SURGERY (L.D.S.)

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
1—PRELIMINARY EXAMINATION	Compulsory on all who commenced their Professional Education after July, 22nd, 1878. Must be registered as a Dental Student at the office of the General Medical Council, 299, Oxford St., London, W.	Compulsory on all who commence their Professional Education after August 1st, 1878. This differs slightly from that required by the English College. Must be duly registered.	Compulsory on all, except those who have passed one equivalent examination. Must be duly registered.	Compulsory on all who commenced the Professional Education after August 1st, 1878. Must be duly registered.
2—AGE at which the Candidate may present himself	Twenty-one.	Twenty-one.	Any age, but diploma cannot be granted until he is twenty-one.	Twenty-one.
3—DURATION OF PROFESSIONAL EDUCATION ...	Four years subsequent to registration,	Four years.	Forty-five months.	Four years.
4—COURSES OF LECTURES, &c., to be attended at a recognised School:—		*** For students commencing after October, 1890. (1.)		
Anatomy	A Course of Lectures during not less than six months or one Winter Session...	One Winter Course. (Six months.)	One Course.	One Winter Session and twenty Lectures on Head and Neck.

4—COURSES OF LECTURES, &c. (*continued*)—	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
Physiology	One Course. (Six months.)	Six months.	One Course.	One Six months' Course.
Practical Physiology (separate from above)	Three months' Course.		One Course.	
Surgery...	Six months' Course.	Six months.	Ditto.	Ditto.
Medicine	Ditto.	Ditto.	Ditto.	Ditto.
Chemistry	Instruction in, which must include Practical Chemistry and Physics.	Ditto (held to embody Metallurgy).	One Winter Course.	
Practical Chemistry		Three months.	One Summer or Winter Course (including Metallurgy).	Three months (includes Metallurgy).
Materia Medica	Instructions in Chemistry, Practical Chemistry and Materia Medica need not be taken in the general hospital and may be taken before registration. *** Attendance at Class Examinations obligatory	Three months.	Ditto.	Ditto.
Dissections and Demonstrations, or	Twelve months.	One Course of Twelve months (Practical Anatomy).	Two Courses (one of Dissections and Demonstrations, and one of Practical Anatomy.	Twelve months (Dissections).
Dissections and Practical Anatomy				
Metallurgy	One Course.			
Course of Lectures on Surgery	Six months, or one Winter Session.			
One Course of Lectures on Medicine	Six months, or one Winter Session.			
Practice of Surgery, and Clinical Lectures	Two Winter Sessions.	Six months (at a recognised Hospital).	Nine months.	Twenty-four Lectures.
Dental Anatomy and Physiology	Two Courses.	One Course.	None.	Twenty-four Lectures.

4—COURSES OF LECTURES, &c. (*continued*)—	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
Dental Surgery & Pathology	Two Courses.	One Course.	One Course.	Twenty Lectures.
Metallurgy (unless specially included in Practical Chemistry)	Ditto.			Twelve Lectures.
Dental Mechanics	Ditto. ⁂ Attendance at Class Examinations obligatory	One Course.	One Course.	Twelve Lectures or Demonstrations.
Practical Instruction in Mechanical Dentistry ...	Three years under a competent Practitioner. This instruction may be taken previous to Registration (2).	Three years under a Registered Dental Practitioner, or in Mechanical Department of a recognised Dental Hospital whose arrangements are held to be satisfactory to the College (3).	Three years under a Registered Dental Licentiate.	Three years under a Registered Practitioner. Attendance at Hospital. (4).
Practice of Dental Surgery in a recognised Dental Hospital, or in the Dental Department of a recognised General Hospital...	Two years.	Two years.	Two years. (5).	Two years. (5.)
5—FEE...	£10 10s. over and above stamp duty.	£10 10s.	£10 10s.	£10 10s.
6—LEAST period during which unsuccessful Candidates are referred to their studies	Six months, subject to the decision of the Board.	Three months. ⁂No Candidate admitted to this Examination who has been rejected by any other Licensing Board within three months.	Three months.	Three months.

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
7—PARTICULARS OF EXAMINATION	(A) *Written.* On General Anatomy and Physiology. General Pathology and Surgery; (6) Dental Anatomy and Physiology; Dental Pathology and Surgery. At the Practical Examination Candidates may be examined—	*Written and Oral*: (1). 1st Part—Anatomy, Physiology, Chemistry with Metallurgy.	First two Examinations same as for Conjoint Board. The third comprises— *Written and Oral*: On all the subjects of the Curriculum. Preparations, Microscopes, and other appliances. (6).	*Written, Oral & Practical*: 1st part—Anatomy, Physiology, Chemistry, and Metallurgy.
	(*a*) On the treatment of Dental Caries, and may be required to prepare and fill cavities with gold or plastic filling or other material, or to do any other operation in Dental Surgery. [Candidates must provide their own instruments.] (*b*) On the mechanical and Surgical treatment of the various irregularities of Children's teeth. (*c*) On Mechanical Dentistry. (B) *Oral*: On all subjects in the Curriculum; conducted by use of Preparations, Casts and Drawings.	2nd Part—Surgery, Medicine, Therapeutics, and Special subjects of Dental Anatomy and Physiology, Dental Surgery, Pathology, and Dental Mechanics. Registered Medical Practitioners are examined on special subjects only. There is a Practical Clinical as well as Written and Oral Examination in Dental and Oral Surgery Pathology and Mechanics.	General Surgery as for third Examination of Conjoint Board.	2nd Part—Surgery, Medicine, Materia Medica, and special Dental subjects. Practical Examination at a Dental Hospital. Candidates are to bring Excavators, Files and Plugging Instruments.

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
8—DATE OF EXAMINATION.	May and November.	I. Professional Examinations. Tuesday, May 2, 1893. ,, July 25, 1893.	Monday, February, 13th; Monday, May, 8th; Monday, November, 13th, 1893.	Wednesday, Oct. 5th, 1892. ,, May 31st, 1893. The Second Examination takes place two days subsequent to these dates.
9—MODIFIED CONDITIONS OF ADMISSION TO EXAMINATION *sine curriculo*. (7). (*a*) Conditions of eligibility.		II. Professional Examinations. Following Thursday. N.B.—Students who commenced their professional education by apprenticeship, before July 22, 1878, are exempted from the Preliminary Examination	Candidates must be registered Dental Practitioners in practice before 1878.	
(*b*) Certificates, &c., required (*continued*).			Certificates of moral and professional character, signed by two Registered Medical Practitioners, and by two Registered Dentists. Name. Age. Address. Date of commencing practice, and whether such practice has been carried on in conjunction with any other business, and if so with what business.	

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
9—MODIFIED CONDITIONS OF ADMISSION TO EXAMINATIONS (*cont.*) (7).			Professional status. Particulars of Professional Education.	Various undertakings as to Professional conduct, &c., have to be made by the Candidate.
(*c*) Manner of Examination				
Fee...			£26 5s.	
For further information apply to Secretary.	F. G. HALLETT, Esq., Examination Hall, Victoria Embankment, London, W.C.	FRANCIS CADELL, M.B., F.R.C.S.E., Secretary and Treasurer, 22, Ainclie Place, Edinburgh.	JOHN BRENNEN, Esq., Royal College of Surgeons, Dublin.	ALEX DUNCAN, Esq., Faculty of Physicians and Surgeons, Faculty Hall, 242, St. Vincent Street, Glasgow.

(1.) For curriculum required for Students who have commenced their studies *prior* to 1st October, 1890, see Prospectus of Regulations, page 5.

(2.) In the case of qualified Surgeons, evidence of a period of not less than two, instead of three, years of such instruction will be sufficient.

(3.) One year's *bonâ fide* apprenticeship with a registered dental practitioner, after being registered as a dental student, may be counted as one of the four years of professional studies. The three years of instruction in mechanical dentistry, or any part of them, may be taken by the student either before or after his registration as a student; but no year of such mechanical instruction shall be counted as one of the four years of professional study unless taken after registration.

(4.) Attendance for two years at a recognised Dental Hospital, or the Dental Department of a recognised General Hospital, in which special provision is made for the proper training of Dental Students.

(5.) Practice of recognised General Surgical Hospital required for six months.

(6.) Candidates who are Members of the College, or who have passed the Examination in Surgery of the Examining Board in England, or who shall produce evidence of having passed the Examination in Surgery for the Licence in Surgery of the Royal College of Surgeons of Edinburgh, the Royal College of Surgeons in Ireland, or the Faculty of Physicians and Surgeons of Glasgow, or an examination in Surgery for a Degree in Medicine or Surgery at a University in the United Kingdom, will be exempt from re-examination in General Surgery and Pathology.

(7.) Candidates who have passed the Second Examination of the Examining Board in England, or who shall produce evidence of having passed the Examination in Anatomy and Physiology required for the Licence in Surgery of the Royal College of Surgeons of Edinburgh, the Royal College of Surgeons in Ireland, or the Faculty of Physicians and Surgeons of Glasgow, or an Examination in Anatomy and Physiology required for a Degree in Medicine or Surgery at a University in the United Kingdom, will be exempt from re-examination in those subjects.

SPECIAL (DENTAL) HOSPITALS.

London School of Dental Surgery, Leicester Square.

Consulting Physician.—Sir Richard Quain, Bart., M.D., F.R.S.

Consulting Surgeon.—Mr. Christopher Heath, F.R.C.S.

Consulting Dental Surgeon.—Sir John Tomes, F.R.S., F.R.C.S. L.D.S.

Dental Surgeons.—Messrs. Storer Bennett; W. Hern; G. Gregson; L. Matheson; C. E. Truman; R. H. Woodhouse.

Assistant Dental Surgeons.—Messrs. H. Baldwin; W. B. Paterson; J. F. Colyer; E. Lloyd Williams. In the afternoons, Messrs. F. J. Bennett: W. H. Dolamore; C. F. Rilot; A. C. Woodhouse and Mr. W. H. Woodruff.

Anæsthetists.—Messrs. G. H. Bailey; Woodhouse Braine; Dr. Dudley Buxton and Dr. Frederic Hewitt.

Assistant Anæsthetists.—Messrs. Carter Braine; Henry Davis and G. Rowell.

Demonstrators.—Messrs. E. H. L. Briault; A. Colyer and W. Gardner.

Medical Tutor.—W. H. Dolamore.

Curator of Mechanical Laboratory.—Mr. A. J. Watts.

Lecturers :—*Dental Surgery and Pathology.*—Mr. Storer Bennett.

Dental Anatomy and Pathology (Human and Comparative).—Mr. Arthur Underwood.

Dental Mechanics.—Mr. David Hepburn.

Metallurgy in its application to Dental purposes.—Professor A. K. Huntingdon (King's College, London).

Mechanical Laboratory.

A mechanical laboratory is now fitted up and opened under the care and superintendence of the lecturer on dental mechanics, and a highly skilled mechanic. Students will be required to take models, manufacture, and fit into the mouth dentures for those patients allotted to them by members of the staff. The actual manufacture to be under the superintendence of the mechanical assistant, while the adapting to the mouth will be supervised by Members of the Staff.

It is intended, in this manner, to supply a portion of the Student's education heretofore unprovided for, and to more perfectly equip him for the exigencies of dental practice. It will enable him to be in a better position to meet the requirements of the College of Surgeons of England with regard to mechanical dentistry, in which subjects the Board of Examiners for the L.D.S. may demand a practical examination from candidates for that diploma.

GENERAL FEE FOR THE SPECIAL LECTURES REQUIRED BY THE CURRICULUM.

Viz., two Courses on Dental Anatomy, two Courses on Dental Surgery, two Courses on Mechanical Dentistry, and one course of Metallurgy, £15 15s.

Fee for the Two Years' Practice of the Hospital required by the Curriculum, £15 15s.

Total Fee for the Special Lectures and Hospital Practice required by the Curriculum, £31 10s.

Students who perform Operations for Filling Teeth must provide their own Instruments for the same.

Additional Fees for a General Hospital for the two years, to fulfil the requirements of the Curriculum, vary from £40 to £50.

MEDICAL TUTOR.

The Medical tutor attends on four days in the week, from 5 to 7 p.m., for two months previous to two of the Annual Examinations.

MORTON SMALE, *Dean.*

NATIONAL DENTAL HOSPITAL AND COLLEGE.

GREAT PORTLAND STREET, W.

Consulting Physicians.—B. W. Richardson, M.A., M.D., F.R.S.; W. H. Broadbent, M.D., F.R.C.P.

Consulting Surgeons.—Sir Spencer Wells, Bart., F.R.C.S.; Christopher Heath, F.R.C.S.

Consulting Dental Surgeon.—Sir Edwin Saunders, F.R.C.S.

Dental Surgeons.—A. F. Canton; H. G. Read; Harry Rose; Alfred Smith; F. Henri Weiss; G. A. Williams.

Assistant Dental Surgeons.—Marcus Davis; C. W. Glassington; W. R. Humby; R. Denison Pedley; G. Read; Willoughby Weiss.

Anæsthetists.—Chas. H. Barkley; Henry Davis; James Maughan; S. E. Pedley; Sidney Spokes.

LECTURERS :—*Dental Anatomy and Physiology.*—Sidney Spokes.

Dental Surgery and Pathology.—Willoughby Weiss.

Dental Mechanics.—Harry Rose.

Dental Metallurgy.—W. Lapraik.

Operative Dental Surgery.—George Cunningham.

Dental Materia Medica.—C. W. Glassington.

Elements of Histology.—James Maughan.

Demonstrator of Dental Mechanics.—W. R. Humby.

Hospital Practice to Registered Practitioners (six months) £7 7s. Ditto (twelve months), £9 9s.

Fee for the two years' Hospital Practice required by the Curriculum, £12 12s. Perpetual Fee, £15 15s.

A laboratory has been arranged for pivot, crown, bar and regulation cases.

Total Fee for the Special Lectures and Hospital Practice required by the Curriculum, £25 4s. Perpetual Fee, £31 10s.

F. HENRI WEISS, *Dean.*

GUY'S HOSPITAL (DENTAL SCHOOL).

Dental Surgeon.—F. Newland-Pedley.

Senior Assistant Dental Surgeon.—W. A. Maggs.

Assistant Dental Surgeons.—J. H. Badcock; A. E. Baker; J. O. Butcher; P. T. Harris; J. Mansbridge; H. Murray; H. L. Pillin; G. O. Richards; R. W. Rouw.

Anæsthetists.—Drs. F. W. Cock; H. F. Lancaster; J. F. W. Silk; Mr. A. D. Fripp; Mr. R. W. Lloyd.

LECTURERS:—*Dental Surgery and Pathology.*—Mr. Newland-Pedley.

Dental Anatomy and Physiology.—Mr. Maggs.

Dental Mechanics.—Mr. Richards.

Metallurgy.—C. E. Groves, F.R.S.

Anæsthetics.—T. Bird.

DEMONSTRATORS:—*Dental Microscopy.*—Mr. Mansbridge.

Dental Mechanics.—Mr. Pillin.

Tutor.—Mr. Rouw. *Dean.*—Dr. Perry.

Fees:—1. By the payment of £90 on entrance.

2. By two payments of 50 guineas, and 40 guineas at the beginning of the first and second years respectively.

A ticket which gives admission to the special lectures and demonstrations and dental practice only may be obtained for 30 guineas paid on entrance.

The inclusive fee for students entering for the M.R.C.S., L.R.C.P., and L.D.S., Eng., is £170 paid in one sum, or 170 guineas paid in three annual instalments at the commencement of each academical year:—First year, 60 guineas; second year, 60 guineas; third year, 30 guineas; fourth year, 20 guineas. An extra fee of one guinea is charged for Practical Chemistry.

EDINBURGH.

DENTAL HOSPITAL AND SCHOOL.

Consulting Physician.—Alex. Peddie, M.D.

Consulting Surgeon.—Joseph Bell, M.D., F.R.C.S.E.

Fee for the two years' practice required by the Curriculum, £12 12s. Fee for each course of lectures, £3 3s.

Consulting Dental Surgeon.—John Smith, D.M., F.R.C.S.E.

Dean and Hon. Treasurer.—W. Bowman Macleod, L.D.S.

Dental Surgeons.—Messrs. W. Bowman Macleod; Andrew Wilson; Malcolm Macgregor; George W. Watson; J. Stewart Durward; James Mackintosh; William Forrester.

Assistant Dental Surgeons.—John S. Amoore; J. Graham Munro; T. Gregory; John Turner; David Monroe; Frederick Page.

Chloroformists.—J. M. Farquharson; W. Lundie; G. Mathieson Cullen.

DENTAL SCHOOL (LECTURES).

Dental Anatomy and Physiology (*Human and Comparative*)—Mr. Andrew Wilson.

Dental Surgery and Pathology.—Mr. George W. Watson.

Mechanical Dentistry.—Mr. W. Bowman Macleod.

Practical Mechanics.—Assistant Demonstrator, J. Stewart Durward. The demonstrations will be spread over the two years of hospital practice. Students will require to furnish their own hand tools.

General fee for the Hospital Practice and special Lectures required by the Curriculum.—Hospital Practice, £15 5s. One course each of Dental Anatomy, Dental Surgery, and Mechanical Dentistry and Demonstations, £9 15.—£25 10s.

Fees to separate Classes.—Dental Anatomy, Dental Surgery, Mechanical Dentistry, £3 5s. each.

The hospital practice and lectures qualify for the Dental Diploma of the Royal College of Surgeons, Edinburgh, and also for that of the other licensing bodies. Second courses of the lectures, as required by the Royal College of Surgeons of England, £2 4s.

The session 1892-93 opens October, 5th, 1892. General fee for the hospital practice and special lectures required, £25 10s.

For further particulars, apply to the Dean, 5, Lauriston Lane, Edinburgh.

GLASGOW.

DENTAL HOSPITAL AND SCHOOL, 4, CHATHAM PLACE, STERLING ROAD.

Hon. Consulting Physician.—W. T. Gairdner, M.D.

Hon. Consulting Surgeon.—Sir G. H. B. Macleod, M.D.

Chloroformists.—Drs. Anderson, Smith, Campbell and Henderson.

Dental Surgeons.—J. A. Biggs ; J. R. Brownlie ; J. Cameron ; J. Cumming ; W. H. Gray ; W. F. Martin ; R. Price ; W. Wallace ; A. Whyte ; W. H. Woodburn.

DENTAL SCHOOL.

Dental Anatomy and Physiology (*Human and Comparative*), by W. Wallace.

Dental Surgery and Pathology, by Rees Price.

Dental Mechanics, by John A. Biggs.

Secretary, D. M. Alexander, Solicitor, 117, Wellington Street, Glasgow, who will forward detailed Prospectus of the School.

BIRMINGHAM SCHOOL OF DENTISTRY, MASON COLLEGE (QUEEN'S FACULTY OF MEDICINE).

The teaching of Dentistry has been undertaken by the Queen's College acting in Association with the Birmingham Dental Hospital, and the Birmingham Clinical Board, so that students may fully qualify themselves for the Dental Diplomas of the Royal Colleges. During the present year (1892), the Dental Department, together with the Medical Faculty, has been transferred to Mason College, where the work will be carried on in premises especially erected for the purpose, and fitted up with a due regard to the requirements of a modern Dental Education.

LECTURERS FOR THE DENTAL CURRICULUM.

Dental Surgery.—Frank E. Huxley, M.R.C.S., L.D.S.

Dental Anatomy.—J. Humphreys, L.D.S.I., F.L.S.

Dental Mechanics.—W. T. Elliott, L.D.S.Edin., and I.,F.C.S.

Dental Metallurgy.—W. A. Tilden, D.Sc., F.R.S. ; Thomas Turner, Assoc.R.S.M.

Surgical Diseases of the Mouth.—F. Marsh, F.R.C.S.

Medical Diseases of the Mouth.—Stacey Wilson, M.B., M.R.C.P.

DEMONSTRATORS :—*Operative Dental Surgery.*—W. T. Madin, L.D.S.

Mechanical Dentistry.—F. H. Goffe, L.D.S.

Dental Pathology.—C. D. Marson, M.R.C.S., L.R.C.P., L.D.S.

General Subjects.—As taught in Medical Department, of Mason College.

College Fees.

A Composition Fee of £42, payable in one sum or in two sums, viz., £21 at the beginning of the first year and £21 at the beginning of the second year of studentship, admits to the full curriculum required for the Dental Diploma (*exclusive of the necessary Hospital Practice.*

Students wishing to take the Diplomas of M.R.C.S., and L.R.C.P., in addition to their dental qualifications, pay a Composition Fee of £73 10. This covers all College fees.

Hospital Fees.

The Dental Hospital Practice and Demonstrations.

Composition Students (2 years)	£10	10	0
Non-Composition Students (2 years)	£14	14	0
Non-Composition Students (1 year)	£8	8	0
Non-Composition Students (6 months)	£5	5	0

For General Surgical Hospital Practice, Lectures, and Demonstrations.

Surgery, 2 winters	£10	10	0
Surgery, 1 winter	£6	6	0

N.B.—Further particulars may be obtained on application to the Warden at the College, or to the Hon. Secretary of the Dental Board, Mason College (Mr. J. Humphreys).

Birmingham Dental Hospital.

Hon. Consulting Physician.—Robert M. Simon, M.D.

Hon. Consulting Surgeon.—John St. S. Wilders, M.R.C.S.

Hon. Consulting Dentists.—Thomas R. English; Adams Parker, L.D.S.; Charles Sims, L.D.S.

Hon. Dental Surgeons.—H. Breward Neale; F. E. Huxley; J. Humphreys; F. W. Richards; W. Palethorpe.

Hon. Assistant Dental Surgeons.—F. H. Goffe; W. R. Roberts; W. T. Madin; F. R. Howard; A. E. Donagan; J. Mountford.

Anæsthetists.—Dr. F. Vinrace; S. W. Haynes; J. H. Blakeney; C. Hutchinson; C. St. Johnston; T. S. Short.

Demonstrator.—J. E. Parrott.

House Surgeon.—W. G. Owen.

Curator of Museum.—J. Humphreys.

DENTAL HOSPITAL OF IRELAND.

25, LINCOLN PLACE, DUBLIN.

Consulting Physicians—F. R. Cruise, M.D. ; John W. Moore, M.D.

Consulting Surgeons.—E. H. Bennett, F.R.C.S.I. ; Sir W. Stokes, F.R.C.S.I.

Consulting Dental Surgeons.—R. H. Moore, F.R.C.S.I. ; Daniel Corbett, M.R.C.S.E., L.D.S., Eng.

Dental Surgeons.—Messrs. Robert Hazelton ; W. Booth Pearsall ; R. Theodore Stack ; A. W. W. Baker ; Daniel Corbett ; George Wycliffe Yeates ; G. M. P. Murray.

Anæsthetists.—Dr. Christopher Gunn ; Messrs. John G. Cronyn ; John R. Graves.

Pathologist.—William Mallett Purser.

Registrar.—William A. Shea.

In connection with a Dental Hospital of Ireland, the Dental School will be open for the Winter Session on October 3rd, 1892.

In addition to Clinical Instruction, courses of lectures will be given at the Hospital in Dental Surgery and Pathology, and in Mechanical Dentistry, by R. Theodore Stack ; A. W. W. Baker ; W. Booth Pearsall, and Daniel Corbett, and at the School of Physic, which is within a few yards of the Hospital, special lectures for dental students will be given in Dental Anatomy, and in Metallurgy by Professor Cunningham and Professor Reynolds. The lectures on dental surgery and medical dentistry will be given during the winter, those in dental anatomy and metallurgy during the summer months. Among the advantages of the school is the mechanical laboratory, where every effort is made to assist the student in mechanical dentistry. In addition to practical instruction in the details of gold, dental alloy, vulcanite, celluloid, and continuous gum work, special demonstrations will be given in the mechanical treatment of cleft-palate, in the treatment of dental irregularities, and in the various methods of inserting pivot teeth. Regulations as to fees and other conditions are the same that exist at the Dental Hospital of London, Leicester Square. Any further information can be obtained from the registrar of the hospital, or

R. THEODORE STACK, *Dean.*

THE OWEN'S COLLEGE, MANCHESTER.

DENTAL DEPARTMENT.

Professors and Lecturers.—Anatomy, Professor A. H. Young. Physiology, Professor Wm. Stirling. Medicine, Professor J. E. Morgan , Professor James Ross. Surgery, Professor A. W. Hare. Clinical Surgery, Messrs. F. A. Heath ; Walter Whitehead ; Thomas Jones ; James Hardie ; F. A. Southam ; G. A. Wright. Chemistry, Professor H. B. Dixon. Materia Medica, Professor D. J. Leech. Dental Surgery, George G. Campion. Dental Anatomy, W. A. Hooton. Dental Mechanics, Thos. Tanner. Dental Metallurgy, Dr. C. A. Burghardt.

Demonstrator on Dental Histology and Pathology.—D. Headridge.

The fee for the two years' lectures, &c., required by the dental curriculum of the Colleges of Surgeons is £50, payable in two sums of £25 each at the beginning of the first and second years of studentship.

The two years' general hospital practice is taken at the Royal Infirmary. The fee is £10 10s., and includes that for attendance on the lectures on clinical surgery.

For further particulars with regard to the Dental Department, application should be made to the Registrar, The Owen's College, Manchester.

THE VICTORIA DENTAL HOSPITAL OF MANCHESTER.

GROSVENOR STREET, ALL SAINTS.

Consulting Physicians.—Sir Wm. Roberts, M.D. ; Messrs. Henry Simpson, M.D. ; J. E. Morgan, M.D. ; D. J. Leech, M.D. ; D. Lloyd Roberts, M.D.

Consulting Surgeons.—Messrs. E. Lund ; F. A. Heath ; W. Whitehead ; T. Jones ; J. Hardie.

Consulting Dental Surgeons.—Messrs. H. Campion ; Parsons Shaw.

Dental Surgeons.—Messrs. H. Planck ; J. Renshaw ; T. Tanner ; J. H. Molloy ; G. O. Whittaker ; W. Dykes ; W. Dougan ; G. G. Campion ; W. Sims ; L. Dreschfeld ; W. Headridge ; J. W. Dunkerley ; W. Smithard ; E. P. Collett ; H. C. Smale.

The fee for the two years' hospital practice required by the College of Surgeons is £12 12s.

For further information apply to HENRY PLANCK, *Dean.*

LIVERPOOL DENTAL HOSPITAL.

MOUNT PLEASANT.

Consulting Physician.—Thomas Robinson Glynn, M.D.

Consulting Surgeon.—Frank T. Paul, F.R.C.S., Eng.

Consulting Dental Surgeons.—Messrs. C. Alder; H. C. Quinby; J. E. Rose; W. H. Waite.

Honorary Dental Surgeons.—Messrs. R. M. Capon; E. A. Councell; R. Edwards; H. Newton Hindley; W. Mapplebeck; W. Matthews; Thos. Mansell; J. N. P. Newton; J. Pidgeon; M. Quinby; J. Royston; G. A. Williams.

Honorary Assistant Dental Surgeons.—Messrs. M. Alexander; E. A. Davies.

Stipendiary Dental Surgeons.—Messrs. A. B. Dalby; R. H. Bates; Charles B. Dobson.

Fees for Hospital Practice, £5 5s. per annum, or a composition fee of £8 8s. for two years' Hospital Practice required for the curriculum to students of the Medical Faculty, University College, Liverpool, and Pupils or Apprentices of Registered Dentists.

Further information may be obtained by applying to the Honorary Secretary, W. L. Jackson, Central Buildings, North John Street.

PLYMOUTH DENTAL HOSPITAL (OCTAGON).

Physician.—C. Albert Hingston, M.D.

Surgeons.—Messrs. Christopher Bulteel; Connel Whippie.

Consulting Dentist.—F. A. Jewers.

Dental Surgeons.—Messrs. W. V. Moore; F. H. Balkwill; Ernest E. Jewers; Ernest Edward Jewers; Henry William Mayne; Louis E. Sexton.

Treasurer.—Alfred Payne Balkwill.

DENTAL SCHOOL.—Certificates of attendance on the practice of this Dental Dispensary are recognised by the College of Surgeons as qualifying for the Diploma in Dental Surgery. The College also recognises the lectures delivered at the Dispensary.

Pupils of any of the Dental Surgeons of the Plymouth Dental Hospital, or other Dentists holding a Diploma of the College of Surgeons, or Member of the Odontological Society, may attend the Hospital on the day of such practitioner as may agree to accept such pupil or pupils, on the payment of £1 1s. per annum to the Institution.

LECTURES.—On Dental Anatomy, by F. H. Balkwill: on Dental Mechanics, by W. V. Moore. Fee to Lectures, one course, £7 7s.; fee to Lectures, double course, £12 12s. (required for Diploma); fee to Dental Practice at Hospital, £5 5s.; fee to entire Dental Curriculum (required for Diploma), 22 guineas.

Further information may be obtained from the Secretary, Mr. E. G. Bennett, at above address.

EXETER DENTAL HOSPITAL.

Consulting Surgeons.—Messrs. A. J. Cumming, F.R.C.S.Eng.; James Bankart, M.B., Lond., F.R.C.S., Eng.

Consulting Dental Surgeon.—S. Bevan Fox.

Dental Surgeons.—Messrs. J. T. Browne-Mason; Henry Biging Mason; S. Mundell; T. G. T. Garland; J. M. Ackland.

Honorary Secretary.—George A. Townsend.

Attendance on the practice of this Hospital is recognised by the Royal College of Surgeons of England as qualifying for their Dental Diploma.

Pupils of any member of the staff or other registered Practitioner (being a Life or Annual Governor) are permitted to attend the practice of the Hospital, subject to the approval of the Medical Sub-Committee, on payment of £5 5s. annually to the funds of the Institution. Students attending the practice of the Hospital must consider themselves strictly under the control of the Medical Officers, and must not undertake any operation without the consent of the Dental Surgeon for the day.

MEDICAL SCHOOLS.

BARTHOLOMEW'S HOSPITAL, SMITHFIELD, E.C.

Fee for general subjects for students of dental surgery:—First winter, 31½ guineas; first summer, 31½ guineas; or a single payment of 63 guineas. Dr. Norman Moore, *Warden*.

CHARING CROSS HOSPITAL, W.C.

The Composition fee for dental students is 54 guineas; fee by instalments 60 guineas, which may be paid in two instalments, 30 guineas on entering; 30 guineas 12 months later.

Dr. J. Mitchell Bruce, *Dean*.

GUY'S HOSPITAL, BOROUGH, S.E.

A Ticket which gives admission to the general lectures, demonstrations and hospital practice, required for the L.D.S.Eng., may be obtained for £60 paid on entrance, or 60 guineas paid in instalments of 30 guineas at the beginning of the first year, and 30 guineas at the beginning of the second year.

Dr. Perry, *Dean.*

KING'S COLLEGE, STRAND, W.C.

No special arrangements are made for dental students.

Prof. Curnow, *Dean.*

LONDON HOSPITAL, MILE END, E.

Composite fee for dental students:—Hospital practice and lectures, £42. This does not include the fee of £2 2s. for practical chemistry.

Munroe Scott, *Warden.*

MIDDLESEX HOSPITAL, BERNERS STREET, W.

Students who intend to become Licentiates in Dental Surgery of the Royal College of Surgeons are admitted to attend the requisite courses of lectures and hospital practice on payment of a fee of 40 guineas, in one sum on entrance, or by instalments of £30 on entrance, and £15 at the beginning of the second winter session.

A. Pearce Gould, *Dean.*

ST. GEORGE'S HOSPITAL, GROSVENOR PLACE, S.W.

Fee for general subjects required for the Diploma in Dental Surgery, including practical chemistry, £55; payable in two instalments: first year, £30; second year, £25. T. T. Whipham, M.D., *Dean.*

ST. MARY'S HOSPITAL, PADDINGTON, W.

Entrance fee to the general hospital practice and lectures required for the examination in Dental Surgery at the Royal College of Surgeons, England, £55; payable in two instalments:—First year, £30; second year, £25.

Herbert Page, *Dean.*

ST. THOMAS'S HOSPITAL, ALBERT EMBANKMENT, S.E.

The fee for attendance on the general subjects required of students in dental surgery is, for the two years, £65; or by instalments, £55 for the first year, and £15 for the second year. If certificates for *dental* practice are also required a special fee for that subject has to be paid.

E. Nettleship, *Dean.*

UNIVERSITY COLLEGE, GOWER STREET, W.C.

The fee for the courses required to be taken at a medical school for the L.D.S. is 50 guineas ; or including Chemistry, Practical Chemistry, Physics and Materia Medica, 65 guineas

E. A. Schäfer, *Dean.*

WESTMINSTER HOSPITAL, BROAD SANCTUARY, S.W.

The fees for the general surgical practice and lectures required for the Dental Diploma of the Royal College of Surgeons may be paid in one of two ways, viz. :—1. In one payment on entrance 50 guineas. 2. In two payments of £30 and £26, to be made respectively at the commencement of each academic year. These payments include the library fee, and entitle the student to attendance on the tutorial classes. H. B. Donkin, M.D., *Dean.*

SCHOOL OF MEDICINE, SURGEONS' HALL, EDINBURGH.

The fees for the general subjects (including practice at the Royal Infirmary) required of dental students, according to the curriculum of the Royal College of Surgeons of Edinburgh, amount to £38 10s.

Stevenson Macadam, *Secretary.*

ANDERSON'S COLLEGE, GLASGOW.

The fees for the general subjects required of dental students, as prescribed by the curriculum of the Faculty of Physicians and Surgeons of Glasgow, amount to £25 14s. 6d. And the fees at the dental school for the special portion of the curriculum, including £12 12s. for dental hospital practice, are £23 2s.—total, £48 16s. 6d.

Dr. A. M. Buchanan, *Dean.*

GOSSIP.

THE course of lectures on Operative Dental Surgery at the National Dental Hospital, which is intended for advanced students and young practitioners, and may be taken as a post graduate course, will begin on Monday, October 10th, at 6.30 p.m., with an open introductory lecture on the Morphology of the Human Denture as effecting Methods of Treatment, illustrated by models. Special subjects to be discussed by Mr. George Cunningham in this year's lectures will include. (1) Combinations of filling materials. (2) Pulp capping and its results, tested by statistics. (3) Crown, bar, and bridge work, with illustrative cases.

MEMS. FOR PRACTICE.

We have received from Messrs. Weiss and Schwarz, of Vienna, a preparation for removing the decayed matter in the root canals of teeth. It is introduced by Dr. Emil Schreier, who states that it is composed of potassium and sodium, and that it acts upon the decayed matter in a root by decomposing it. It produces a high temperature during the process, and effervesces, transforming the contents of the root canal into a soapy mass, which is easily removed, at the same time it renders the canal proof against the cultivation of new germs. It is applied with a canal cleanser, and and the operation is to be repeated until no further chemical action takes place. Dr. Schreier states that after this preparation has been applied to the canal it is immaterial whether any particles of matter remain as they are rendered harmless. He cautions dentists against the too frequent use of the same cleanser, as the preparation acts upon the steel and is liable to make it brittle. Air decomposes the material, but the oxidation is confined to the surface only ; he recommends that the cork shall be pushed down on to the preparation each time after using, the bottles are made without necks for this purpose.

The Dental Manufacturing Co. have some samples of Dr. Schreier's preparation and will be glad to hear from anyone wishing to try it.

The Dental Manufacturing Company have also sent us a glass tube and bulb for spraying Scott' Calorific fluid on the gum before extraction. The directions are to exhaust the air from the tube by firmly pressing the india-rubber teat, insert the end of the tube in the fluid, when it will quickly fill. Mr. Scott recommends that a piece of wool or lint should be held on either side of the tooth to be operated upon to absorb any access of fluid. The little apparatus is inexpensive, being issued at 1/-, including box.

THE DENTAL RECORD.

VOL. XII. OCTOBER 1st, 1892. No. 10.

Original Communications.

ADDRESS TO THE STUDENTS OF UNIVERSITY COLLEGE, LONDON, OCTOBER 3rd, 1892.*

BY S. J. HUTCHINSON, M.R.C.S., L.D.S., ENG.

Clinical Lecturer on Dental Surgery in University College, and Dental Surgeon to University College Hospital.

GENTLEMEN,

Looking at the long roll of my distinguished predecessors, and at all the good and wise things they have said, I feel how difficult it is for me to deliver an address worthy of the occasion. The occasion, gentlemen, is simply this, and the address is intended only as an expression of welcome on the part of the whole teaching staff of this College to those of you who have thrown in your lot with us, and who here to-day commence or continue the study of the noble and beneficent science of medicine. It is to you, gentlemen, I. would most cordially say how we all are thoroughly in earnest in our desire to make your career here a pleasant and a successful one, and let me say in all friendliness that I personally, in common with many who have gone before me, look back upon the years I spent here as a student as perhaps the happiest portion of my life.

It is a time of life when there are no responsibilities to speak of, and few anxieties, except those perhaps which arise when you have to face a certain ordeal, known by the brief but expressive word "Exams." I shall have something more to say on this subject, but now it is enough to say briefly that the simplest and best way to prepare for diploma examinations is to go in for what are called class examinations.

Depend upon it, gentlemen, this is the golden rule for successful encounters with the gentlemen in Burlington Gardens, and in various places on the classic banks of the river Thames. Of course I don't mean simply attending class examinations without previous preparation, but the whole ladder of medical education is arranged in such a way now that by constant attendance on lectures and demonstrations, and by careful note-taking, by working up the notes from text books afterwards, and by a rigorous attendance on the class examinations the whole thing is made much simpler, the subjects, despite their increased number and extent, are more easily mastered, and take a firmer hold on the memory, and are thus more available when wanted than when acquired by that pernicious system of spasmodic work, and still worse by the popular, but fallacious system of "cramming," during the last few weeks before an examination.

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* Abstracted for the "DENTAL RECORD."

Cramming in its ordinary acceptation reminds one most of a man trying to eat enough at one meal to last him for two days, or climbing a ladder of which two rungs out of every three are missing. Of course the student who does not work is, to make a Hibernicism, like a man trying to climb a ladder without any rungs at all.

Carlyle has said "All work of man is as the swimmer's, a waste ocean threatens to devour him,—if he front it not bravely, it will keep its word. By incessant wise defiance of it, trusty rebuke and buffet of it, behold how loyally it supports him—bears him as its conqueror along."

It is not well to moralise too much, but I feel sure the results of experience have proved that it is really the *easiest* way of getting a really sound and thorough knowledge of the science of medicine, and that it is expedient to follow the routine indicated above.

"The flighty purpose is never o'ertook
Unless the deed go with it; from this moment
The very firstlings of my heart shall be
The firstlings of my hand."

Gentlemen,—Since we met here last year, many most important events have happened, not only in our College and Hospital, but in the medical world generally.

The late John Bright once said, during the Crimean War, "The Angel of Death is hovering over us, we can almost hear the beating of its wings." Surely, gentleman, this terrible epidemic of cholera on the Continent makes these words sink into our hearts, and we can only be deeply thankful that as far as human skill can prevail, it has so far kept the scourge out of our midst!

Two important events which have happened since last year at this time, are the Reports of the Lords Committee on Hospitals, and secondly, the coming into force of the five years' curriculum for the conjoint Board, and again the mountain has gone on labouring, but it has not yet brought forth the M.D. degree for London medical students.

Perhaps it is best to deal with the question of the new curriculum first, as it is of more importance now, though the others are of great interest at a later period of your careers.

Let me commence by earnestly recommending every student to pass the Matriculation Examination of the London University. You can never tell the circumstances in which you may find yourselves, and it is certain that many more men would take the London degrees if they had only passed the Matriculation Examination.

It is only when a student gets thoroughly interested in his work that he realises how one step leads to another, and how much more easy it is to pass examinations in his student days, than it is to go back again, after commencing practice, to study for some coveted higher degree. Let me, therefore, urge upon every one of you, the importance of striving for the "best possible," that is to say, make up your minds that you will take the highest degrees attainable, the M.D. or M.S. London, or the F.R.C.P., or F.R.C.S.

Those of you who have had the incalculable advantage of an University career, cannot be too grateful to your parents, whose generosity and wisdom have given you this privilege, and you cannot better show and prove your gratitude than by turning such a training to its greatest advantage.

The five years' curriculum is intended for *average* students, and such, I fear I must admit, despite an apparent anomaly, the majority of us are!

The *exceptional* student could easily do the five years' work in four years, but as the longer time is now compulsory, it is no use regretting its infliction, but let us hope it will lessen the number of "detrimentals."

The curriculum of the conjoint Board does not admit of the six months' private tuition in general practice, which was originally proposed, and which is recommended by the Medical Council, and which would have been an attempt to realise the best points of the apprenticeship system, without its drawbacks. And, although it was intended to be only accepted after the student had passed all his examinations (except the final), it would, I fear, have extended the evil of the unqualified assistant system, which I regard as the greatest curse which ever evaded the intentions of the Medical Act!

Still, this private practice, if rightly carried out by student and practitioner, would have given the former many opportunities of learning many things, which it is almost impossible to acquire in a hospital.

There is always a certain fear of medical students acquiring a hospital manner, which however efficacious it may be in the exigencies of hospital practice, certainly does not suit in private practice. And this leads me to take advantage of this occasion to recommend you, gentlemen, at the outset of your career, to cultivate a spirit of consideration towards the patients whom you are called upon to deal with during your studentship, and to behave towards them, as far as possible, as you would towards your own patients in private practice. You must forgive me if I allude to this, because I know from my own experience how easy it is to acquire certain little acerbities of manner, which are meekly borne by the hospital patient, but which would be effectually resented by a private patient. Martial, the Latin poet, said :—

"I had, Oh, Symmachus, a simple pain,
You came a hundred students in your train,
A hundred probing fingers felt my brow ;
I had no fever then, I have it now !

I know too well from experience how difficult it is sometimes to manage patients, and I feel sure that you will believe I am speaking only from the kindest motives when asking you to remember what I have said, whilst at the same time I know you will not think I am making any imputation upon you, but that I am only emphasizing what you already feel, and which you must know will be of the greatest advantage to you in the future. I do assure you it is almost as important to know how to deal with a patient personally as it is to know what is the matter with him, and what is best to give him as a remedy.

Besides all this there are certain things to which it is worth your while to pay special attention and which you cannot know too well. Need I say that I mean anatomy and physiology, and to these I would add pathology, in its widest sense. Without a thorough knowledge of these the sciences of medicine and surgery are simply the "baseless fabric of a vision." It is well also to pay special attention to the "art of prescribing." I say "art" advisedly, for whilst brilliant skill in surgery, the *tactus eruditus* of the master, is the fine art of surgery, so is an efficient and palatable prescription the fine art of a skiful physician.

Almost anybody can paint a door, but it takes an artist to paint a picture. So it is with prescriptions, and I am convinced that few things conduce so much to the success of a medical practitioner as an artistic prescription in its truest sense. Let me illustrate this by a true story:—

A patient of the poorer class, who was able to call in a medical attendant, thought he would employ *two* to see which he liked best, one came in the morning, the other in the evening. The patient finally decided in favour of the morning doctor, for, though he charged one and sixpence to the other's shilling, "His medicine had not to be taken so often." As Sir Charles Hartly said in "The Fringe of Society," "The painter makes the picture, but the price makes the painter."

With regard to the recommendation of the Lords' Committee I do not think I can do better than read an extract from the *Pall Mall Gazette* on this subject.

"The Conference on the management of Metropolitan Hospitals held at Spencer House will have served its purpose if it only brings into prominence the great question of the doctoring of the poor. The reforms suggested by the Lords' Committee are practical and to the point, so far as they go. To substitute combined organization for the chaos of cross purposes which is the chief feature of hospital management that strikes an outsider, will be a substantial gain. But it will not be all that is wanted—perhaps, indeed, not more than half. For what we have to admit and face is this, that apart from severe accidents or extreme illness, which qualify patients for treatment as inmates of hospitals, medical practice in the poorer quarters of most big towns still lingers in an almost mediæval stage. There are, it is true, the out-patient departments of the big hospitals. But when even the best-qualified medical man has to examine and treat several hundred cases in the space of two or three hours the result can hardly be satisfactory either to doctor or to patient. There are also the club doctors and the Medical Provident Dispensaries, but the latter, excellent as far as they go, cover only a fraction of the ground as yet. For thousands of the working class there is no adequate provision for nursing or treatment in their own homes. Patients of this class have but the faintest notion of what medical treatment really means. They pay their fee (sixpence, a shilling; or at the most eighteenpence), and (in contrast to private practice) they expect to get their money's worth in medicine. That is the test; the doctor is supposed to be 'cheap' or 'dear' in proportion as he gives a liberal amount of some kind of fluid for his money. The 'surgeries' presided over by one qualified medical man, with, say, half-a-dozen unqualified assistants, are thronged on Saturday night with a crowd that brings its bottles. The qualified man comes in for State occasions, such as the last illness, or the signing of the death certificate; the unqualified do the rest. Now these are the problems which lie at the root of the hospital question. Hundreds of lives are lost that might be saved, for want of medical aid to discover and check the beginnings of disease at the time when they might be checked; hundreds of cases go to hospitals which need never have gone if properly attended to in an earlier stage. Men of science and high training, who are alone competent to do this work, demand higher fees than the poor can pay, and for lack of them illness goes from bad to worse. Is there any way of meeting this state of thing short of establishing the doctor, as we have established the parson?

"The Establishment and Endowment of the Doctor would of course be entirely in consonance with the prevailing Socialism of the day. Indeed, to some extent the doctor is established and endowed already. The 'Medical Officer of Health' is an institution, less venerable, but not less generally accepted, than the parson. It is a rankly socialist institution, no doubt; but we have never heard that even the most timid and conservative of persons are against it. On the contrary, the only criticism which Poor Law Conferences, Social Science Congresses, and other staid and sober bodies pass upon the Medical Officer of Health, is that his position is not socialistic enough. He is allowed, like an Attorney-General, to combine private with public practice; and the suggestion is often made that areas should be grouped, so as to give the State Doctors sufficient work and pay to justify cutting off their individualist avocations. Now prevention is better than cure, no doubt; but nobody says that cure is altogether worthless, and if the State may legitimately and usefully employ a Doctor for Prevention (which is what your Medical Officers of Health are for), why not also Doctors for Cure (which is what your ordinary 'medical man' professes to be for)? We cannot see, for the life of us; and the whole tendency of the times—to say nothing of the state of the Hospital subscription lists—is making, we cannot doubt, for the Establishment of the Doctor."

The reference to parsons in the above quotation leads me to enunciate a very simple solution of the other very burning question to which I have alluded already, that of a degree in medicine for London Medical Students.

No one can deny, that as far as quality and quantity of curriculum, and of examination, those of the Conjoint Board fully equal in medical and surgical learning those of many British and Irish University degrees, even if they do not excel certain of them. Is it not therefore a glaring anomaly that a London Medical Student who has gone through a five years' curriculum, who has passed, I do not know how many severe and searching examinations in medicine, surgery, and midwifery, and whose opportunities for clinical studies are unequalled, should not after all this be able to style himself legally by the title "Doctor?"

Now the solution of this difficulty appears very simple, and I submit the suggestion for your earnest consideration, for probably the consummation will be in your hands and not in ours. I say the simple solution is this :—

Let every medical practitioner who has duly gone through the curriculum ordained by the Medical Council and who has passed finally in medicine, surgery, and midwifery be thereafter legally entitled to style himself "Doctor," just as every clergyman or minister who has fulfilled the prescribed ordinances is styled "Reverend." The case is absolutely on all fours, and it would save an immense amount of trouble. It would not abolish one single University or Examining Board, and, best of all, it would not create a new one. It would still be open for the student to graduate at Oxford or Cambridge, Dublin or Edinburgh, or at the London University, and he would be legally called Dr. So-and-So, with M.D. or M.B. after his name as the case might be.

It would be well now to consider what the medical student had best do when he shall have duly and fully qualified, and he will probably, by that time, have discovered whether he has developed any particular taste for, or proficiency in, any branch of the science of medicine or surgery, or if he prefers to work at some scientific subject, such as anatomy, physiology or bacteriology.

Those of you who desire or determine to become general practitioners, and such it is to be presumed the majority of you do, I should like to refer to the introductory address given here by Professor Victor Horsley, in October, 1891, for you will there find some very practical and useful advice bearing upon this subject, which it would be superfluous to reiterate.

But there is one branch of practice, which provides at this time a very satisfactory opening for such of you as are possessed of manual dexterity.

The opening for practice is afforded in dental-surgery, a diploma being granted by the Royal Colleges of Surgeons throughout the Kingdom. The curriculum for this license, runs on exactly similar lines as that of the conjoint diploma, as far as anatomy, physiology, practical physiology, dissections, and lectures on medicine and surgery are concerned ; but it does not require so much Hospital practice in medicine and surgery, nor in pathology, or obstetrics, but in place of these it requires two years' *Dental Practice* at a special hospital, or special department of a general hospital, as well as courses of lectures on dental surgery, dental anatomy, dental mechanics, and metallurgy, and three years in a dental laboratory. This curriculum must be preceded by the passing of an examination in arts, the same as for the conjoint diploma, but it only requires four years instead of five.

Let me say, however, that I do not think this difference will long exist, for those of us who are specially interested in the dental license, have all along endeavoured to assimilate it with the conjoint diploma, so as to offer every possible inducement to dental students to secure both diplomas, and I am glad to say that many of our best junior men have found it quite possible to do so.

By way of emphasis, I would repeat that the dental diploma runs exactly on parallel lines with the conjoint diploma, as far as the scientific education is concerned, and only diverges by supplanting some of the medicine and surgery by dental surgery.

The new five years' curriculum has a clause which compels students to pass six months of that time in a special hospital, and I trust that dental hospitals will be included amongst those special hospitals, for even this short training would be of immense benefit to those who are going into the army, or naval, or missionary medical services. Indeed, it is satisfactory to be able to make public recognition of the fact, that the Director-General of the Naval Medical Service, has within the last few months ordered a limited number of naval surgeons on furlough to various hospitals, with a view to their acquiring a knowledge of the elements of dentistry, more especially those relative to the immediate relief of pain.

Now, gentlemen, students of this college, you are singularly favoured in your opportunities for acquiring a knowledge of dental surgery, on account of our proximity to two Dental Hospitals—one in Leicester Square, and one in Great Portland Street. The latter is being rebuilt so as to have every modern convenience and appliance for efficient instruction and practice in dental surgery, and it is less than ten minutes' walk from this college.

The Dental Hospital in Leicester Square is the largest, and oldest, and has associated with its teaching staff many well-known names, and it is not much further away than the hospital in Great Portland Street, and the work at both these hospitals can be carried on by any of you at University College, along with your medical work—if you wish—by a careful arrangement of your time.

In the face of these advantages it does not seem desirable for University College to follow the example of Guy's Hospital and establish a Dental School within our walls, for whilst Guy's was more than two miles from any dental school, we are less than a mile from two.

Personally, I am very much averse to a multiplication of schools, either Medical or Dental, except where fully justified by questions of time and space.

And, now, gentlemen, whilst I have fully and fairly put before you the advantages of the dental license, I sincerely trust that if any of you decide to adopt the dental branch of our great profession, you will as well make up your minds to take the conjoint diploma, or degrees at the Universities if you can ; and you may take my word for it that you will never regret the little extra time and work which will be necessary.

The Dental diploma, required by law, 1878, is a very good one, and it requires actually more medical education than the Medical Act of 1815 required of the medical practitioner of that date.

Before I leave this question there is one point worthy of notice about the Dental curriculum, and that is the fact that in the examinations, candidates are liable to have questions asked them in every subject on which they are taught, and to perform every operation, except extraction, which they may have to practise. Now this is a point worthy of notice, for it is not much use to expect students to attend lectures or demonstrations if they are not to be examined in them afterwards. With regard to the professional status of the Dentists, it is worthy of notice that there are the

Odontological Society of Great Britain and the British Dental Association, the latter with branches all over the Kingdom, to which they can belong, *provided they do not advertize their skill or their charges*, and provided they conduct their practices in a professional manner. These Societies, by these ethical laws, have done, and are doing much to instil truly scientific and honorable spirit amongst their members.

Perhaps enough has now been said about the students' work; let us devote a short time to the students' play.

The advantages of a judicious admixture of play and work are so obvious that it is needless to dilate upon them, but the following quotation is interesting: "The notion that strong, and specially fatiguing labour is especially injurious to health is erroneous. Tried by the test of the death rate (and it is difficult to see what other test is practicable), strong labour is seen to be healthy labour. Taking 1,000 as the normal standard, we find that whilst the mortality of blacksmiths is only 973, that of iron and steel workers only 869, and that of coal-miners only 891, the death-rate of tailors (on the other hand) is 1,051, and of hairdressers 1,327. 'And this,' says Dr. Aldridge, is in harmony with what physiology proves, that the exercise of organs, and especially of the muscular system, is a pre-requisite to health and preservative of 'life.' It is however the judicious admixture which is so important, for, like Mr. Pickwick's punch, it is possible to have too much of a good thing, and all I would venture to ask of you is this—don't neglect healthy exercise, but don't let it encroach on your work too much; go in for cricket, football, tennis, cycling, boating, anything you like, but play them for the love of them, and not for "cups" and "pewters," and above all don't in your games overtax your strength; remember the motto in Bædecker's guide books, "Pleasure ends when fatigue begins."

There are other athletic fields open for the energetic use of the time which can legitimately be spared for this purpose; and especially to be commended is volunteering, or the Volunteer Medical Staff Corps.

"The chiefest action of a man of spirit,
Is never to be out of action; we should think
The soul was never put into the body,
Which has so many rare and curious pieces
Of mathematical motion, to stand still—
Virtue is ever sowing of her seeds,

In the trenches for the soldier; in the wakeful study
For the scholar; in the furrows of the sea
For men of that profession; out of which
Arise and spring up honour!"

Having now dealt with the subject of the medical student's career in its various phases, it would be well to address a few words specially to those of you about to enter into practice, and I think it is right to urge upon you the great advantage to be gained by joining some of the various societies for Medical Life Assurance, and I would especially commend the Medical Sickness, Annuity and Life Assurance Society, also that you should contribute to the British Medical Benevolent Society; and those of you who live within 20 miles of London, ought to join the Society for the Relief of the Widows and Orphans of Medical Men, even though you may not have assumed such a contingent risk yourselves! Much has been said about the advantage of being a married man when in medical practice, and of this there can be no doubt, but it ought to be only under certain conditions. First, that the doctor is in possession of a certain and sufficient income; secondly, that he has a good sum put by for a rainy day; thirdly, that he insures his life or otherwise provides for his widow and possible family.

I don't know any more miserable result of modern civilization than early and improvident marriage; and no people in any profession are so guilty of this crime, which is really a blunder, than the village curate and the village doctor!

With regard to the social position of the medical man, I am convinced that it depends entirely upon the man himself in the first place, for his education and his degrees or diplomas place him in the noble order of gentlemen, and it is his conduct and demeanour alone, which will enable him to remain in that honourable position or not, and to enjoy all its privileges, or be ostracised.

As to the public and official honour of medical men, so far the peerage has been denied them, but with Professor Huxley in the Privy Council, Sir Walter Foster, Secretary to the Local Government Board, and with Lord Playfair of St. Andrew's, it really does not seem beyond the range of possibility that peerages should be conferred on medical men.

Without expressing any opinion as to the desirability, or otherwise, of a House of Lords, I may be allowed to say that as long as such a distinction as a peerage exists I should like to see it conferred upon some of our leading physicians and surgeons; but, gentlemen, I should like to see the peerage conferred directly for their glorious services to science, for their skill and devotion in the treatment of disease and injury, and for their blameless lives, and *not*, gentlemen, because they have been members of Parliament, and have done good service to their party whatever it may be!

"The splendours of the firmament of time
May be eclipsed, but are extinguished not;
Like stars to their appointed heights they climb."

Sir Thomas Watson once said, on an occasion like this: "The profession of medicine having for its end the common good of mankind, knows nothing of national enmities, of political strife, of sectarian divisions. Disease and pain, the sole condition of its ministry, it is disquieted by no misgivings as to the justice or honesty of its client's cause, but dispenses its peculiar benefits without stint or scruple, to men of every country and party, and rank and religion, and to men of no religion at all; and like the quality of mercy, of which it is the handmaid, "it blesseth him that gives and him that takes," reading continually to our own hearts the most impressive lessons, the most solemn warnings.

"It is ours to know in how many instances, forming indeed a vast majority of the whole, bodily suffering and sickness are the result of evil courses, of the sins of our fathers, of our own unbridled passions, of the malevolent spirit of others.

"Familiar with death in its manifold shapes, witnessing from day to day its sudden stroke, its slow but open siege, its secret and insidious approaches, we are not permitted to be unmindful that our own stay also is brief and uncertain, our opportunities fleeting and our time, even when longest, very short if measured by our moral wants and intellectual cravings.

"Surely, Gentlemen, you will not dare without adequate preparation to embark in such a calling as this, so capable of good if rightly used, so full of peril to yourselves and to mankind if administered ignorantly or unfaithfully. If you should be successful let it not make you presumptuous, but remember that in your most successful efforts you are but the honoured instrument of a Mightier Power—that after all it is 'God who healeth our diseases, and redeemeth our life from destruction.'"

Gentlemen, in conclusion, let me again offer in the name of the Faculty of Medicine of University College, a hearty welcome to those who join us to-day, good wishes to those who are in the midst of their work, and God-speed to those who are going out into the world, endeavouring one and all to realise—

> "That best portion of a good man's life,
> His little, nameless, unremembered acts
> Of kindness and of love."

A CASE OF BURIED TEETH WITH DILACERATION.

By Traer Harris, M.R.C.S., L.D.S.,Eng., L.S.A.

Assistant Dental Surgeon, Guy's Hospital; Dental Surgeon,
Great Northern Central Hospital.

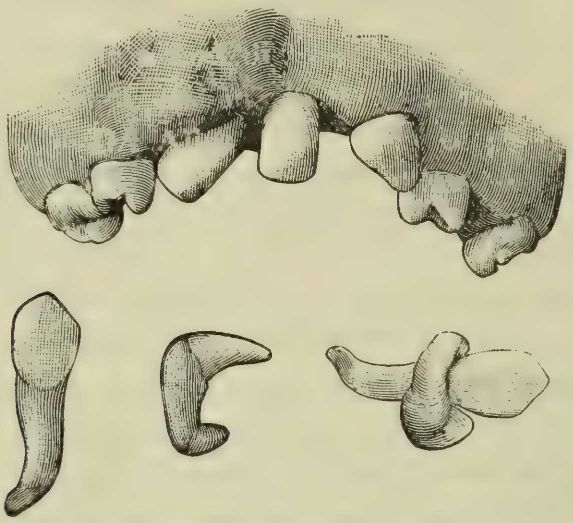
The above case, which came under my care in the early months of this year, occurred in the person of a young woman, twenty-four years of age. She visited me with the two-fold object of having the irregularity of the right upper central incisor corrected, and to obtain advice with regard to the non-appearance of her right upper lateral and canine tooth. The right central incisor deviated very obliquely towards the right side of the mouth, leaving but very little space between the tilted distal angle of its crown and the right upper first bicuspid tooth, and the area, which normally should be occupied by the two missing teeth was thus practically bridged over.

The position of her left central incisor was exactly in the median line of the mouth, so that the result to the arch was an entire absence of symmetry.

She had noticed a distinct fulness about her right upper lip, and for the last twelve months or so there had been an increase of mucous discharge from the right nostril accompanied by a vague sense of uneasiness about the anterior part of the right inferior meatus.

The patient was one of a large family, but she appeared to be the only member with any pronounced dental irregularity, and she in addition possessed an ill-developed left hand with congenital deficiency of the index, middle and ring fingers of that hand.

On raising the upper lip, a prominent hard and somewhat nodular tumour could be felt through the gum in the region of the right incisor fossa, and a small oval aperture in the gum immediately above the obliquely directed incisor crown disclosed a tartar-covered tooth surface almost in direct contact with the reclining distal edge of the central, a thin cushion of gum alone intervening at one part. I removed the tartar, which was of the hard black variety, during the examination of the case, exposing enamel structure; and, judging from the dense nature of the tartar deposit, I thought this must have been the position of things for years.



My first operative measure for the relief of this impacted tooth for such it seemed to be, was the removal of the right central. I then examined the presenting surface more freely with the probe, and it appeared to be convex and broad from before backwards and the same from side to side, but not in the least resembling the cutting edge of an incisor or canine tooth.

There being no cause for urgent interference, I resolved now to wait for a month to see if there was any disposition towards advancement, but failing to observe any alteration at the end of this period, I decided to remove the cause of the swelling whatever shape or form it might be. The patient being under an anæsthetic, I dislodged the buried lateral incisor, which had undergone dilaceration to a very marked extent. It was doubly flexed upon itself, the crown lying on parallel lines with the lower third of its root. Its convexity was forwards, while its crown curved away so that its cutting edge was directed towards the palate. The surface which presented at the small orifice in the gum was situated at the juncture of the crown with the root on what should normally be the labial aspect of the tooth. This explained the bulbous extremity which probing elicited. A well marked puckering existed on the concave surface, where the crown had been forced backwards on the root during its developmental period, when the tooth, in a partially calcified condition, had perforce to adapt itself to a limited space, owing most probably to its impingement on the more advanced though obliquely directed central incisor.

The dilacerated lateral partially accounted for the size and shape of the swelling, but I thought the missing canine might also possibly be lying hidden in this region, and further probing proved this to be the case.

The tooth could be felt. After staunching the bleeding and drawing the gum away from the wound, I could see the canine tooth lying in a transverse direction under the floor of the nose. Considering the position in which the tooth was placed, comparatively little resistance was met with during its removal, which was next effected. The cusp of the tooth was found to be pointing towards the median line, its root was slightly deflected, but in other respects the tooth was normal. The relation of one buried tooth to the other has been approximately shown in the drawing. I finally completed the case by adapting a small denture to the vacant space.

OBITUARY NOTICES.

Dr. Taft has favoured us with the following testimonials and resolutions that were presented, read and adopted at the recent meeting of the American Dental Association :

IN MEMORIAM—DR. JOHN ALLEN.

In the dispensation of an all-wise and over-ruling Providence, Dr. John Allen, of New York, on the 8th day of March, 1892, at the age of eighty-two, passed from this to a higher and better life ; having attained a fulness and ripeness of age beyond that of the common lot of men.

Dr. Allen stood as a representative man in the profession of his choice.

In the line to which he gave special attention he was the chief, and was so recognised not only in this, but in the countries of the world wherever prosthetic dentistry is known and practised. He it was, who brought to its present high state of perfection that variety of substitutes known as continuous gum dentures.

Though his chief attention and labour were devoted to this special work, he was interested and took part in the various lines of thought and effort that were employed for the development, growth and establishment of dental science and art. He was ever ready to defend, and sought to elevate the profession to a higher plane of usefulnesss.

Dr. Allen was one of the organizers of the Ohio College of Dental Surgery, a professor and an efficient teacher in that institution.

In the subject of dental education he always manifested a warm interest. A writer of more than ordinary ability he has added many valuable contributions to the literature of the profession.

He was an active member of this association from almost the time of its organization and did much to promote its welfare. He was also a member of, and an active worker in, a number of other dental societies. Dr. Allen was a man of purest character and highest integrity ; one not only respected but loved by all who knew him ; in manner most affable ; in bearing dignified ; in spirit gentle and sympathetic.

The loss of such a one is always an occasion of sadness and sorrow, but we have the consolation of the knowledge that his career was rounded, full and complete, and his death closed a life filled with good works for his fellow men.

In view of the above,

Resolved. That we will ever cherish the memory of our departed brother and seek to establish and perpetuate the high principles that were so fully illustrated in his noble life.

Resolved. That the traits so pre-eminently characterizing the life of him we now commemorate are worthy, not only of our high regard, but most earnest emulation.

Resolved. That this testimonial be placed on a memorial page of the transactions of this body, and a copy, properly engrossed, be sent to the family of the deceased ; also that a copy be sent to the dental journals of this and other countries for publication.

IN MEMORY OF C. A. KINGSBURY, M.D., D.D.S.

Within the last year Dr. Chas. A. Kingsbury was called from this to a higher life, in the seventy-second year of his age.

Dr. Kingsbury many years ago became identified with this association and retained his membership at the time of his death, and though he was not always present at its meetings, so highly was he esteemed by the membership of the body that it was a pleasure to all to have his name upon the roll of members.

Dr. Kingsbury entered the practice of the profession in 1839, in Philadelphia, and continued actively engaged in its pursuit during his life. He studied dentistry in Trenton, N.J. He was intimately acquainted with the leading men of the profession almost the whole of his professional career, and imbibed, in a large measure, the interest and enthusiasm of those men for dental science and art ; indeed, that association, in a degree, shaped his professional life. He was familiar with all things that entered into the development and progress of dentistry for about fifty years. He was a man of liberal learning and broad culture; one whose sociability was a predominant characteristic. In his early life he was a teacher, and after many years' practice of his profession he was for a time a successful teacher in one of the dental colleges in the city of his home. He was highly esteemed by all who knew him; he was a man of sterling characteristics, genial, kind and sympathetic in his association of his fellows. In his death, not only this association, but the entire profession loses another of the pioneers who was ever devoted to its interests, ever contributing of his resources to its upbuilding.

Resolved. That we will ever cherish the memory of our departed brother as one whom we delight to honour, and to emulate in his leading characteristics.

Resolved. That this statement and resolution be placed upon the memorial page of the proceedings of this body. That a copy, in proper form, be transmitted by the secretary to the family of the deceased, and that it be sent to the journals for publication.

AMONG the most difficult tasks a dentist is often called upon to undertake is to decide whether an attack of facial neuralgia is truly such or is the result of a dental disease. The following observations taken from the *New York Medical Journal* may help out the diagnosis in one of the most difficult class of cases :—A most interesting series of observations recorded by Dr. Gellé, upon the condition of the ear in various forms of nervous disease has appeared in recent issues of the *Progrés Médical.* The coexistence of pain in the ear and neuralgia upon the same side of the face was found in twenty-two cases of facial neuralgia. Often facial neuralgia starting from different points is symptomatic of acute inflammation of the ear, or of new inflammatory attacks set up on some former diathetic otorrhœa. The facial pain in this case precedes by several days the otic or periotic complication. At times, in spite of frequent attacks and intense otalgia, the ear itself remains sound. In certain instances, the attacks bear a close relation to a simple or diathetic inflammatory condition at the level of the orifice of the Eustachian tube. In three cases examined, syphilis proved to be the cause of the unilateral ear difficulty, one of the patients presenting severe otalgia without lesion for some time before the appearance of a sub-acute otitis resulting in suppuration, secondary symptoms appearing only after the ear trouble. There is a history of facial neuralgia in nearly all cases of chronic deafness. It is also a frequent premonitory symptom of facial paralysis, and accompanies vertigo *ab aure læsa* and hyperacusia. The cases cited demonstrate a close relationship between facial neuralgia, acute otitis, and facial hemiplegia.

THE DENTAL RECORD, LONDON: OCT. 1, 1892.

THE TEACHING ELEMENT IN CONGRESSES.

A NEW departure was inaugurated int he Dermatological Congress, recently held in Germany, by cutting down the papers to a minimum, and going a step further by suggesting that no formal business of that kind should be done at the Rome meeting next year. There is a great deal to be said for this view of the matter. If, for example, in the meetings held annually by our dental societies, the time were taken up wholly in demonstrations, and showing such cases of interest as could be collected in the neighbourhood, and above all in gathering together a really well arranged museum, there is little doubt, we venture to think, that more would be learnt than by asking half-a-dozen or so persons to read papers upon subjects either too recondite for anyone to follow or too commonplace to keep men awake. Dental physiology, dental pathology and bacteriology are, as has been shown both at the last meeting of the Association, and at the Odontological Society, quite enough to draw large and interested audiences, and certainly can, when handled by good microscopists who know what they are about, be a means of conveying quite a store of useful information. The mutual intercourse between men, who, living in different centres of different schools of thought, must be most beneficial, provided they are encouraged to meet for discussion and conversation. Half the advantages are lost when everyone is seated mumchance by his neighbour's side while a lecturer raps out platitudes out of a written communication from which he never lifts his eyes. Learned papers are no doubt of great value, but they should be reserved for learned societies, where they who attend are more or less sufficiently well up in the matter to be dealt with, to understand if not to discuss it. Even here much valuable time is often lost, because certain men always get upon their feet whether they know anything of what they are talking about or whether they do not, and the really erudite ones either cannot speak because there is no time, or because they get in the way from sheer *ennui* of going out after the paper. Whether the first six speakers should not be either whipped up by the secretary before the meeting and duly named by the chair, may or may not be a good plan, but it certainly would enhance the value of discussions, and improve the character of our literature.

THE canopy of gloom and horror which has rested so long over Europe seems at last lifting, and the terrible cholera to be gradually sinking into the stage of hibernation which so often precedes a second and worse outbreak as the summer returns again. Surely the one lesson to be learnt is cleanliness in great and small things, a lesson which bacteriology ought to make a very emphatic one for surgeons and dentists. There is a danger, lest in making a fetish of disinfectants, we neglect the all important first principle of cleanliness.

Selections.

THE INTERPROXIMATE SPACES.

By G. V. Black, M.D., D.D.S., Jacksonville, Ill.

In an article read before the Odontographic Society of Chicago, and published in the Dental Review of July, 1890, and also in a series of articles on the management of enamel margins, published in the *Dental Cosmos* last year, I have called attention strongly to the matter of care in the preservation of the form of the interproximate spaces. I have also in some degree, called attention to the evils which follow in case of failure to observe this care in the treatment of proximate cavities. My feeling is that much more needs to be said of this matter before the profession, as a body, will realize its full importance. This is a result of the long habit of disregard for the form of these spaces, and of doing violence to the gum septum In bringing this matter before you now, though I have something more to say, my principal desire is to provoke a discussion of it. Many men read articles of the kind I have written and pass them by without giving the subject sufficient study. Their attention has been but momentarily occupied by the thought presented, whereas if they should engage in a discussion of it in this society they might be led to think more deeply of the subject, and make trial of the plans of practice proposed. Most of us learn of these subjects, and improve our methods of practice slowly, and adopt this or that thought only after it has repeatedly found temporary lodgement in our minds. When I stop to review my own progress I find that this has been the case with myself, and my observation points out that the same is true of most men.

In this paper it is not proposed to endeavour to discuss all of the causes of failure of proximate fillings, but to confine it to three points relating particularly to the interproximate spaces. These are: imperfect forms of proximate contract; bad forms of, and insufficient width of, the interproximate space, and needless injuries to the gum septum.

There are other prolific causes of failure of proximate fillings, such as imperfect excavation, bad forms of the enamel edges, bad arrangement of the lines of enamel margins, injury to the enamel edges while packing gold, imperfect adaptation of the filling material to the enamel edges, insufficient or faulty anchorage. While all of these are regarded as prolific causes of failure, any one of which might well serve as the basis of a paper, I shall not now discuss them.

The propositions to which I shall now direct your attention and endeavour to maintain are these:

1st. A healthy gum septum of good form, or filling the interproximate space, is necessary to the cleanliness of the space.

2nd. An interproximate space not filled by the gum septum and of such form as to retain food débris, serves as a pocket for the accumulation and decomposition of such débris, with the formation of acid products, which cause the beginning or recurrence of decay of the teeth.

3rd. An unhealthy gum septum and an unclean space are a constant menace to the health of the peridental membranes, and a frequent starting point of disease of a serious character.

4th. Proximate fillings must be so formed, and finished, as to produce a proximate contact that will not hold food débris in its grasp, nor leak the same into the interproximate space during mastication, and thus injure and destroy the gum septum. Thus will be maintained, with the greatest certainty, the health of the teeth, the gum septum, and the peridental membranes.

5th. The full width and proper form of the interproximate space must be maintained so that the gum septum shall have sufficient room to maintain its health and perform its functions. Bad forms of the interproximate space should be improved when treating proximate surfaces.

6th. When the interproximate space has been lost, or its width diminished, by previous loss of the contact points of the teeth from caries, which has allowed the teeth to drop together, the space must be regained by judicious wedging, and the fillings so formed and finished that the width of the space shall be maintained.

7th. The gum septum must not be seriously injured by the use of wedges in separating the teeth, by temporary fillings crowded against the gums while treating pulp cases, nor by the improper use of instruments in finishing fillings.

The first proposition, that a healthy gum septum of good form, or filling the interproximate space, is necessary to the cleanliness of the space, would seem to need no argument to make it apparent to every one; for if the space and gum septum are not of such form as to be self-cleaning, or the space is not perfectly filled by the gum septum, it simply becomes a catch-basin for debris. This is true except in abnormally broad spaces without contact of the teeth. This condition can rarely be produced artificially. The artificial production of permanent separations to obtain self-cleaning spaces was extensively tried in the first half of the present century, and its failure is so generally admitted that it may be dismissed with this reference. The space, artificially produced by filling, closes by the teeth falling together, producing a shrinkage of the arch to that extent; and generally the form of the space produced is found to hold lodgments of food débris when the teeth have fallen together. Therefore the experience of the profession has shown that space produced by the file to give room for operating is bad practice. In case there is no intention to produce a permanent open space, but only to give room for finishing the filling, a proximate contact cannot certainly be made that will not hold food débris in its grasp, or leak into the interproximate space to such a degree as to destroy the gum septum, or seriously injure its arched form by breaking down its central portion, causing food to lodge and undergo decomposition with acid products. This becomes a cause of recurrence of decay. I may state here that in what I shall term the arched form of the gum septum the tissue is fullest in that portion central from buccal to lingual between the teeth, so that food débris that may have been forced past the contact point and thus lies loosely in the space is constantly dragged out by the sliding of food to the buccal, or lingual sides of the teeth and gums in the act of mastication, thus continuously cleaning the space. This is a form of the gum septum that is cleanly, though it may not fill the interproximate space.

THE FORM OF PROXIMATE CONTACT.

Now, what do we mean by reproducing the correct form of the interproximate space? Is it the exact reproduction of the original form of the tooth? No, not always. Many natural teeth are well formed, and not a few are of bad form. When the forms were originally excellent we will do well to reproduce them. We will do well to reproduce good forms, or at least improve the forms, in those cases in which the forms were originally bad.

What are good interproximate spaces? Who among us have studied the forms of the teeth, the forms of the interproximate spaces, the forms of the proximate contact, and gum septum closely enough to answer this question. I can give my views and start the discussion of the subject, feeling certain that the close study of it will serve to correct many grave errors in practice. It is certain that there are good forms and bad forms of these spaces, and so long as we are unable to clearly define good forms we will certainly be unable to produce good forms in our treatment of proximate surfaces.

There is one principle that obtains in the make-up of every good interproximate space, and that is a form of proximate contact that will not hold food débris in its grasp. This does not depend entirely upon the rigidity of the contact, or the firmness with which the teeth resist separation, but upon form. We cannot expect the accuracy and rigidity of the contact to absolutely exclude food débris. What form, then, most certainly gives the required result?

All know that the teeth have motion in their sockets, much restricted certainly, but still a certain amount of motion, by which the contact points are rubbed one upon another. Suppose, for illustration, we take two marbles with perfectly polished surfaces and press them together, giving them ever so little sliding motion upon each other, and at the same time press some fibres or particles between the contact points and try to make them stay in the grasp of the contact. It will be found impossible, such things slip out one way or another. Now, this is the principle of the contact between the teeth. It is the contact of rounded surfaces in which the actual contact is a small point rounded quickly away in every direction, so that débris of any kind forced in is quickly removed by natural processes. In the study of the best formed arches we find the contact between the teeth based on this principle from the incisors to the molars, and as dentures are presented to us in our offices, if we study them carefully, we will find that they correspond sharply to this principle ; the contact is effective in maintaining clean spaces, while as they diverge toward broad flattened contacts they are correspondingly faulty.

In this respect we find a constant gradation in comparative anatomy, from the sharply rounded contacts that prevail in the carnivora that eat tough stringy food, to the broad, flattened contacts in those animals that subsist largely on grain or brittle food, of which the horse will serve as a type. In the omnivora we find a middle form between these extremes. In man this middle ground is generally maintained, but we will find gradations that in a degree typify them both. In some we find very strong square tooth crowns that proximate with comparatively broad, flattened surfaces, while the majority of even broad crowned teeth form contact with rather small round points. In the long bell crowned teeth the contact points are much rounded and small in area, though the teeth may be large.

The contact between the marbles which I have given as typifying the contact between the teeth is substantially correct, but the contact points of the teeth are not perfect spheres as in marbles. They are generally more rounded in one direction than in another. And in many instances the mesial surface of a tooth is nearly flat at the contact point while the distal surface of the neighbouring tooth is sharply rounded. Between the incisors the contact points are rounded most in the labio-lingual direction. Between the bicuspids the rounding is often about equal, but between broad crowned teeth the rounding is greatest in the occludo-gingival direction. In the lower molars, the contact of the first and second is generally rounded in all directions, while between the second and third it is somewhat broader from buccal to lingual. In the upper molars the contact becomes broadest from buccal to lingual, but it is sharply rounded from occluding to gingival, with a broad space to the gingival; however, in many dentures the contact between the upper molars is quite sharply rounded from buccal to lingual as well.

A mode of measuring the area of the contacts of the teeth is very desirable, and the plan that I have used, though only approximating an actual measurement, is of much value. Take a thread of some given size, say size A of sewing silk and pass it into the interproximate space. Then bring the free ends together and draw them tight enough to bring the thread close around the contact point, but not so tight as to strain the teeth apart. The space between the threads where they leave the space will show the area of the contact, plus what the thread by reason of its size lacks of reaching the actual contact. In this it will be seen that the size of the thread cuts an important figure, for on account of the rounding of the surfaces a large thread cannot be brought so near the actual contact as a small one. After the thread has been brought fairly tight, and has been observed, draw it gently through the contact and observe carefully how nearly the two parts approach each other, and especially whether the thread comes through the contact with a snap, as it should if the contact is well rounded, or drags through with more or less grating. This latter is characteristic of a flattened contact, whether made by a file or by the wear of the contact points against each other in mastication. If the thread is drawn parallel with the length of the teeth the bucco-lingual breadth of the contact will be shown; and if it be drawn at right angles to the length of the teeth the occludo-gingival breadth will be shown. This plan of measurement is valuable in the examination of the contacts that we make in our treatment of proximate surfaces.

The form of the space to the gingival of the contact seems to be important. The best formed spaces broaden quickly from the point of contact, so that any particles of food that are forced past it in mastication are not held, but are at once loose and freely movable, so that the next morsel of food that is crushed between the teeth, as it glides aside over the lingual and buccal sides of the teeth and gums, will catch and carry them out of the space. To this end the arch form of the gum septum from buccal to lingual is important.

When we study closely the beginning of caries in the proximate surfaces of the teeth of young people, we find that it almost always has its points of first penetration of the enamel slightly rootwise from the contact point. This occurs in individuals in whom there is rather a strong predisposition to caries early in life, when the festoons of the gum septa are so prominent as to prevent the cleaning of the spaces, or to cause them to hold débris. In individuals in whom the predisposition to caries is less strong, or in whom the proximate contacts of the teeth and the gum septa are of better forms, such decays may not occur. When we find the festoons of the gingivæ large continuously for a considerable time in young people (when not swollen from calcareous deposits) we may expect a number of proximate decays. This is, I think, because these enlarged festoons interfered with the natural process of cleaning the interproximate spaces during mastication. Therefore an overfull gum septum is worse than one that is underfull, but presents a good arched form. This condition of overfulness is frequent in young persons. A gum septum that is lowest centrally between the teeth, forming a pocket in which débris is retained, is bad, whether the condition is caused by overfulness of the festoons or from the breaking down of the central portion.

Many persons of middle age, or past, whose teeth have presented good proximate contact, and who have escaped with little or no proximate decay in early life, are found to have one or more proximate decays beginning near the gingival line. In these cases we generally find that the contact points have been flattened and their area much increased by wear of the one against the other, and that in the particular space, or spaces, where decay occurs, these flattened points of contact have held food débris in their grasp, and this has been forced more and more against the gum septum until the central portion of it is broken down, forming a pocket in which decomposition with acid production has occurred. Caries is the consequence. It is notable that in these cases the decay is much further toward the gingival line than that which occurs in younger persons when the contact points are less flat or in whom the gingival festoons are overfull.

What shall we do with these cases when they are presented to us before caries has occurred? Patients not unfrequently consult us early, when the wedging of food into the space is causing discomfort from pressure on the gum septum, and upon close examination we find a much flattened contact, and the gum septum being broken down. Shall we treat these cases at once by wedging sufficiently and then forming sufficient cavity to restore a rounded contact by filling, and thus relieve the patient of discomfort at once? or shall we wait until a considerable part of the tooth has been destroyed by caries? Suppose decay is found to have begun shall we fill the cavity and finish with a separating file, and leave the flat contact to renew the mischief? Certainly we should wedge sufficiently to restore the rounded form of contact and finish toward the cervix with a file with a rounded face, widening the space to the gingivæ of the contact as we find it in the best forms. In many of these cases we may exaggerate the rounding from buccal to lingual to advantage. Then food that happens to be forced past the contact will be freely movable and the space will be kept clean in the natural way.

These cases of flattened contact by wear with their results furnish a picture of much that is being done in the treatment of proximate cavities. A decay has occurred. The cavity is, we may say, well excavated, skilfully formed, and carefully filled. The contour of the occluding surface is restored, but the proximate surface is shaped with the separating file, leaving a broad flat surface instead of the rounded contact point. And especially no concavity is formed to the gingival of the contact point, so that in this direction also the grasp of the contact holds food that is forced in, instead of leaving it loose and moveable as it has passed into the space. The next that is forced in sends the first on to the central portion of the gum septum and holds it firmly. The gum breaks down, or is absorbed, so that the cervical margin of the filling is uncovered, decomposition and acid production occurs in apposition with the enamel margins, and decay recurs.

In this it will seen that the operator has produced the condition, as to form, that seriously endangers the permanence of the filling. The safer plan is to get the necessary space to reproduce the contour of the proximate surface, and finish to a rounded point that will preserve the gum septum and a clean interproximate space.

THE SPACE.

I will now speak of the interproximate space apart from the form of the proximate contact. I have already referred to the fact that in normal conditions this space is filled with the gum septum to the contact point, and that the integrity of this tissue is important to the continued health of the teeth and their membranes.

It is of the utmost importance that the full width of the interproximate space be preserved in order that the gum septum shall have sufficient room for the maintenance of its tissue in the full measure of health and function. It is a matter of observation that wide interproximate spaces rootwise from the proximate contact maintain the health and cleanliness of the teeth better than narrow ones, or that bell crowned teeth are, other things being equal, cleaner and healthier than teeth with thick necks and narrow interproximate spaces. While we cannot make bell crowned teeth of thick neck ones, we can maintain the full width of the spaces provided by nature ; and this should always be done by gaining sufficient room to complete our filling to represent the full original mesio-distal diameter of the teeth. In no case in which there has been original contact can this be done without artificial separation of the teeth for finishing the fillings. Separation by the use of the file is no longer to be thought of. It does not give the room we want, and is bad practice. The dentist of to-day has no use for the separating file as such.

But we are called upon to do more than maintain the space. The contact points are frequently destroyed by caries, and the space has become much narrowed by the teeth dropping together before patients apply for treatment, and occasionally this has proceeded so far that the necks of the teeth touch each other, annihilating the space altogether. In these cases it is not a question of obtaining room for operating, but a question of regaining the lost interproximate space. We may operate, or make a filling in much less room than is required to reform the interproximate space that is so necessary to the renewal of the gum septum and the continued health of the surfaces operated upon.

To some this may seem like rehearsing an old story. I have written of it plainly and pointedly before (see DENTAL REVIEW, July, 1890, page 452), yet I was surprised to see in a recent number of the *Dental Cosmos*, over the name of one who is giving instruction in operative dentistry, a case in which the central incisors had dropped together from the loss of their proximate contact and were wedged apart for the recovery of the space (regulated) and then filled to the normal form, cited as something new. (See *Dental Cosmos*, April, 1892, page 278). I should not have presented this paper were it not a fact that I am continually meeting cases in which this whole subject has been neglected, such as this : A lady, a stranger, coming from a distant city, presents herself complaining of pain in the region of the lower first and second molars. I find two large proximate fillings with insufficient interproximate space, and a separating file contact ; the fillings, I am informed, have been in position eighteen months. The gum septa are almost entirely destroyed centrally between the teeth and packed with decomposing débris. The whole region between the teeth is exquisitely sensitive. Now, this patient tells me she has repeatedly complained to her dentist of this pain, and that he was unable to find cause for it. Only one thing is to be done ; wedge until the space is regained. and then remove the fillings and make others of proper form to preserve the space and protect the gum septum. But many, yes, the greater number of these cases, go on without much, if any, complaint of pain until the gum septum is destroyed and caries has recurred at the gingival margin.

Will the gum septum regain its former size and fill the space if it be given sufficient room and proper protection afforded ?

This is a pertinent question, and often an important one. It may be stated as a general rule, that in patients under middle age the gum septum will be completely reformed, provided the border of the alveolar process is still of full height. Especial care as to cleanliness should be observed for a time—a month or two—after the operation. Indeed I am in the habit of seeing such cases several times within a few weeks that I may insure the renewal of the gum tissue, and sometimes resort to stimulating lotions in addition to rigid cleanliness.

In some cases we cannot expect a complete renewal of the tissue, that is, the interproximate space will not be filled to the contact point. In these the form of contact is all the more important, and especially it should be sharply rounded, and narrow, from buccal to lingual. Then the tendency will be for the short gum septum to assume the arch form, being highest just under the contact point. In this case the gliding of the food to the buccal and lingual during mastication will drag out all particles that may be forced in past the contact point, and keep the space clean. A close examination of mouths in which the septa have become short, and in which the spaces remain clean, will show plainly that this is the principle upon which cleanliness is maintained. A little study will enable us to copy them in our operations.

Those cases in which the septum of the alveolar process has also been broken down, often remain bad spaces after all I have been able to do for them. It is in these that a departure from the normal types of contact may be tried. Some will do better if the contact is removed considerably toward the gingival, and the grinding surface cut away, either to buccal or lingual—generally the latter—so that the act of mastication will induce a strong gliding motion of food in such direction as to clean the space, or the whole bucco-lingual width of the grinding surface may be sloped away to a position reasonably near the contact point. In doing this the filling is rounded boldly out from near the neck of the tooth to form the contact point and the concave portion finished with suitably formed instruments. This plan may also be used in teeth that are so badly broken down that it is not thought well to build on the full form of the crown from fear that the strength will not be sufficient to bear the strain of mastication.

INJURIES TO THE GUM SEPTUM.

I will now refer more particularly to injuries of the gum septum during operations upon proximate surfaces. This tissue suffers as little perhaps from temporary abuse as any other, but it is liable to serious injury from long continued maltreatment. One of the most constant abuses occurs in cases in which the treatment of root canals, or exposed pulps, requires some kind of temporary fillings. In these, it seems to be common practice to fill both the cavity in the tooth and the interproximate space with cotton saturated with some kind of gum or with gutta-percha forced into position without reference to compression of the gum tissue. Indeed severe compression is often recommended as a means of getting the gum tissue out of the way while making the filling. In this way the gum septum is often destroyed, or a deep pocket formed centrally between the teeth. After the treatment is finished and the cavity filled, even when the proximate space and contact are left in good form, this gum septum often fails to recover; or is only partially restored to its former fulness and strength. If the proximate contact is faulty it is irretrievably lost, for the vacant interproximate space or the pocket which has been formed centrally between the teeth, fills with débris which undergoes decomposition with the formation of acid in contact with the unprotected margins of the newly placed filling. This insures a recurrence of decay even though a perfect filling has been made.

The destruction of the gum septum may have been regarded as legitimate in times past, especially after we had cohesive gold and before we had rubber dam. The mode of practice has, in a manner, been inherited by us of the present day. But close observation of cases has shown its evil results, while improved methods demonstrated that this mutilation is unnecessary. It is easy to take a thin blade, such as one of Harlan's scalers, or a somewhat broader blade of the same pattern, and place one edge of it against the neck of the tooth operated upon and lean the other against the proximating tooth, and while holding this rigidly in place, insert a gutta-percha filling firmly, and at the same time protect the gum septum and give it sufficient space. This requires almost no time. It is convenient to have two or three widths of these blades for the purpose. Cotton and sandarac is an abomination and should have no place in a well regulated office.

In wedging teeth, injury to the gum septum is far too common. In times past many of us have driven wooden wedges between the teeth, crushing out the entire gum septum at a blow. I hope that mode of separating teeth is not practised by any of us now, for it was essentially bad. I only allude to it to show how our profession has grown up in disregard of the contents of the interproximate space.

Although we may no longer drive such wedges, we are often guilty of destroying this tissue in wedging with rubber, cotton, etc., by injudiciously placing the wedge so that the gum is compressed, or by allowing it to slip from the proximate contact, where it should always be held, into the wider part of the space against the septum of the alveolar process, where, besides causing the patient extreme pain, it will do a lasting injury to the gum tissue. Possibly but few of us are entirely free from this, as an accident of practice, but to do this frequently, or to fail to observe great care to avoid it, and to use all means to mitigate the injury in case of accident, is bad practice.

Injury to the gum septum in finishing proximate fillings often becomes a serious matter. Think of pushing and pulling a separating file back and forth to file down a proximate filling with the saw on its edge, tearing the soft tissue at every stroke, often until the last of the gum septum is lacerated beyond recovery, if not entirely removed from the space. Then the fillings are finished with flat proximating surfaces that will catch and hold food between them and prevent the recovery of any gum tissue that may be left in the space.

The separating file should not be used to trim proximate fillings. When it becomes necessary to cut to make room between a newly made proximate filling and the neighbouring tooth for passing finishing instruments a thin separating file might be used, but a fine saw held in rigid frame is better. This should be used carefully to make the one cut and then immediately laid aside. Every instrument used afterward should present a smooth polished edge to the gum tissue. The instrument with which I do the bulk of the trimming is the thread saw. This is turned with its smooth polished back to the gum tissue and cuts toward the occluding surface of the tooth. It is insinuated under the overhanging portions of the filling, and the trimming is expeditiously done with the minimum of injury to the gum. The trimming about the buccal, labial, or lingual angles, that this instrument will not reach, is done by the smooth edged draw files and with disks, and the contact point is rounded to the desired form. This work cannot be done with the same expedition and effectiveness with the separating file. Its shape is unsuited to the work.

Many dentists are using the revolving disk for finishing proximate surfaces. So far as the form of the proximate contact is concerned this is as bad as the separating file. The tendency of the disk is to cut away the prominence of the contact point, and this occurs almost inevitably when the endeavour is made to finish the proximate surface with it. Yet the disk is a very useful instrument for rounding the buccal or lingual angles of proximate fillings. I make much use of it for this purpose, but do not use it between the teeth, except occasionally a rim disk when I have plenty of room to pass the rim safely beyond the contact point.

Now it may be said that the dental profession have used flat separating files for forming the proximate surfaces of fillings from time immemorial, and certainly their fillings have not all failed. Certainly not. Many good fillings have been made in spite of the unsuitableness of the flat files, and there has been a continuous advance in the treatment of proximate surfaces up to the present time. So please do not consider me pessimistic in this matter But many teeth of bad form and faulty texture have never decayed. Many contact points flattened by wear have never leaked food into the proximate space. Also, many fillings of bad form have done excellent service. Yet it is the teeth of bad form and faulty texture that decay most. It is the badly worn contacts that oftenest do damage by leakage. It is the fillings of bad form that are most liable to failure.

Continually the question is being asked, "why do so many proximate fillings fail?" In this paper I have tried to point out, not the *sum*, but some of the whys, with the hope that a close study of it may reduce the number of failures.—*Dental Review.*

THE FACTORS CONCERNED IN DENTAL DETERIORATION.

By L. C. F. Hugo, D.D.S., Washington, D. C.

Our patients often ask us why it is that human teeth are so bad and so much worse than those of older generations.

With a view to being prepared with an answer, in accordance with our present light, I have consulted on this subject the best thought of our profession. In this paper I present to you a *résumé* of that enquiry, together with some comments and elaboration of my own.

Though limited to two or three generations, the layman's observation of the progressive decadence of civilized man's dental organs is in harmony with the dentist's extended knowledge covering thousands of years.

According to Dr. Darby, of Philadelphia, the teeth of the ancient monks in the charnel-house on Mount Sinai show that the farther back they date the more nearly free from decay they are. He examined a large number of Egyptian mummies, finding ample jaw and but little defective dental structure. The remains found in the *huacas* or tombs of Peru show the teeth in almost perfect condition, as is likewise the case with those in the crypt at Hythe, England. The Druids of Anglesea, as attested by their teeth, were seldom subject to dental troubles.

In disagreement with the examples of ancient teeth just given are the Etrurian remains, which show extensive dental lesions. To my mind the condition of these teeth does not antagonize, but is rather a confirmation of, the opinion that among civilized nations there is progressive dental deterioration. Let us see. Hundreds of years before the founding of Rome, Etruria was a *civilized* country. Commerce was the principal pursuit of its inhabitants. A luxurious life was the goal of their existence. Furthermore, the teeth, having been found in tumuli, are in all probability the remains of a class of persons in whom ease, luxury, vice, capricious appetites had wrought the same results as are now observed under similar circumstances among us. The Etrurian examples are only apparently exceptional.

Now as to modern teeth. Dr. Beers, of Montreal, says, "It is probably a perfectly safe estimate to make that in American and Canadian cities of fifty thousand people not a hundred native-born can be found, between the ages of four and fourteen, who have wholly escaped caries and premature loss of some of the teeth. If the ravages were to proceed in the same ratio, men and women would be edentulous by the time they were forty, were it not for the preservative skill of the dental operator." Dr. Ottofy, of Chicago, examined the teeth of children in public schools. Of six hundred and twenty-three pupils between the ages of five and fifteen, only forty-eight had perfectly sound teeth,—that is, only seven and one-half per cent.

Dr. B. W. Richardson, an English observer, "found that, of over four thousand persons of both sexes, and of all ages, over eighty per cent. were affected more or less severely with dental caries, while it was rare to meet with a person in whom both sets of teeth were altogether free from disease."

Though this is the extreme of widespread dental defectiveness, it may serve as an illustration of what is found among modern civilized nations, and among semi-civilized or barbarian people that come in prolonged contact with civilization.

Not only has there become observable in the teeth a gradual structural change, but an anatomical one as well. It has been noted that frequently the upper wisdom-teeth of civilized nations have only two roots—and these often coalesced—whereas the *dens sapientiæ*, as seen in the most ancient jaws exhumed in Europe, shows uniformly three distinct roots. Nature does not stop here, but, in accordance with "the law of economy of growth," she is stamping condemnation upon the tooth under consideration, by permitting it to be of readily decayable structure, or by suppressing it altogether. The upper lateral, too, is occasionally missing. These two classes of teeth are the least useful in the set, and in a crowded jaw they may well be dispensed with to give their better neighbours more room. The question presents itself—*Quousque tandem ?*—will this process of elimination end here.

Let us now examine the factors concerned in bringing about man's dental impairment.

For convenience of consideration these factors may be grouped as *remote*—those affecting the teeth through the general system, whether directly or indirectly—and *immediate*—those directly affecting the external local condition of the teeth.

The *remote factors* are—

1. Civilization in some of its *effects or concomitants.*
2. Change of diet involving a lack of functional exercise of the teeth.
3. Impairment of the general health.
4. Prenatal influences.
5. Crossing.

CIVILIZATION IN SOME OF ITS EFFECTS OR CONCOMITANTS.

It is an indisputable fact that certain features of civilized life tend to the decadence of physical vigour. The principal element in this condition, however, is the check offered by civilization to the weeding-out process of "the survival of the fittest." The healing art and improved sanitary observance have kept and are keeping alive persons that in uncivilized life would have died before reaching maturity. It is the offspring of this class of persons that furnishes so large a percentage of the sum total of physical degeneracy. "For all France the mortality in 1771 was 34" (in 1,000); "by the year 1801 it had dropped to 28; in 1883 to 22." This shows an immense gain in the preservation of life—the weak deriving the larger share of the gain.

Though civilization has done this much to preserve and propagate the physically degenerate, and though it has decidedly enervating influences, we must not, and this mistake is often made, *blame civilization per se.* It is not necessarily incompatible with sound physical development. Some of the most highly civilized people, such, for example, as members of the upper class of European society living in the country, have a strong, sound physique, with good teeth, much better usually than their countrymen of a lower social scale. But these persons are exceptional, because they lead conservative lives; because they live near nature; because they follow Cleobulus's advice, "Avoid excess;" because they take advantage of the *beneficial* features of civilization, and by intelligent discrimination escape the deleterious.

Comparing the nerves, muscles, and bones of the present civilized with those of uncivilized man—ancient and modern—we cannot help thinking that, in some degree, the ameliorations of civilized life impose physical degeneracy. By the word ameliorations, as here employed, is meant in a broad sense the supplantation of brawn by brain, bodily exertion by labour-saving machinery, exposure by protection.

Primitive man, with his steady nerves, tough muscles, and strong bones, was by the stimulus of his environment and by the weeding out of the weak, prepared to hold his own under the trying conditions of the struggle for existence. This resulted in the production and preservation of physical soundness.

Man, however, is said to be naturally lazy. His brain from the awakening impulse studied the "royal road" to ease—that is, he began ameliorating his condition. In course of time, as his intellect developed, his experience increased, his observations expanded, he began to subjugate the animal world and the crude forces of nature to serve as more convenient and improved means to his ends. In other words, the cunning of his brain devised means to lighten the burden of his muscle. It sought to secure him safety from the wild beasts and from the inclemencies of weather; it sought to widen the range of his food articles, to save an expenditure of effort in making these articles more easily obtainable and less difficult to chew. In short, he began growing away from the very conditions that had developed him into physical perfection, to become that artificial product—that paradoxical miscellany of virtue and vice, of of strength and weakness, *modern civilized man.*

In a great measure he has made himself; hence he lives without due regard to many of the requirements of his animal economy. Quite true, tolerant nature will adapt herself to circumstances. But when man outruns his rate of adaptation, he must suffer impairment of health.

Dental defectiveness was the exception not only in ancient man, where he lived, as Aurelius advises, "according to nature," but it is the exception even now in uncivilized man, where he still lives in barbarian purity. An examination of his mouth, or of the skull of his immediate ancestor, will give abundant proof of what has just been stated. The Earthmen, living in the Kalihan Desert, South Africa, are, it is said, "complete savages, and yet have ideally perfect teeth." John R. Mummery has examined about three thousand skulls of modern barbarians, finding but little decay and few irregularities. Dr. Winder found in one thousand skulls, principally of Indians, only about fifty defective teeth. The few

Eskimo and even the Sandwich Islander remains made a good showing.

Observation goes to prove that the more nearly pure his type and the nearer to original conditions man lives the better his teeth are. But, let him come in contact with certain ways of civilization, and he will in a few generations bear the indubitable physical record of it. In speaking of the Indians in their habitat, an ethnological observer says, " The vices of civilization have not tainted their blood, nor its luxuries sapped their strength." But removed from their natural home and surroundings, they lose their bodily vigor. The Indian boys put to school at Chemawa are soon transformed into the ordinary cage of human ills, among which " the hell o' a' disease" is not the least annoying. But a comparatively short time ago the teeth of the Sandwich Islander were good. Now, having tasted some of the fruits of civilized life, having contracted new habits and diseases, his teeth are deteriorating. Dr. H. Flagg says of the Matto-Grosso Indian, that in his home, where he is at liberty to secure what he likes, he dies with his teeth in. " Take now the same Indian and subject him to what we call civilization. He may be badly nourished, because he is overworked and underfed, or he may be badly nourished because he is overfed and underworked ;" at any rate his teeth suffer. The southern negro, prior to a quarter of century ago, when he lived on simple, coarse food, worked regularly, and took proper rest, possessed good teeth ; but now, as he gets access to a greater variety of food articles, prepared so as to require little or no hard chewing, works less, and is more irregular in his habits, in short, enjoys some phases, not always of the best, of civilized life, is beginning to show, by a progressive though slow deterioration of his teeth, the effect of his ameliorated condition. Poor " Lo ! " as he becomes civilized, eats pie, and drinks fire water, evinces in the poorer structure of his dental organs the unmistakable signs of a changed life. In all this we can see a distinct relation between the physical condition of man and the degree of his removal from natural environment. I am, of course, speaking in terms of grand averages.

Change of Diet, involving a lack of Functional Exercise of the Teeth.

The teeth grew in man's jaw to meet certain requirements of his his diet ; and they performed their office just as the teeth of the lower animals of to-day, living in a natural condition, still do their whole duty.

Just here the question may be asked, Why is it that dental decay is by no means infrequent among our four-footed friends, and yet they live on practically the same food as their habitat would yield them. It may be worth while to examine this point. Thus far dental lesions have been observed in such *domesticated* animals as horses and cows. In these occasional cases, may not the animals have been treated in violation of the laws governing their natural food-seeking and food-chewing? May they not have been kept in small, ill-ventilated places? May they not have been neglected as to sufficient feeding and watering? May they not have been obliged to subsist on food that in their habitat they would refuse to eat? Very likely, if we investigate their history, we would find that man's interference will account for these lesions in the lower animals as well as for those in his own case. Where dental decay in the lower animals is not due to man's agency, we may look upon it as a *lusus naturæ.*

Civilized man's extended range of food-articles and his improved methods in making them easily masticable result in a partial disuse of the chewing apparatus.

While a radical change of diet may only affect the condition of the teeth, it is sometimes followed by surprising anatomical alterations. For example, we are told John Hunter fed a gull on grain. The change from a fish diet resulted in the development of a gizzard, which up to then had been in a rudimentary state. This seems to show that the gull of to-day lives on different food from that of his ancestors. Professor Peirce says of a certain species of ant-eater that in the anterior part of this animal's jaw there are no teeth, except occasionally an aborted lateral. Yet the *germs* of the front teeth are always present in the jaw. He infers that, in the distant past, the ancestors of the ant-eater must have lived on food requiring front teeth; and that a change of diet resulted in this suppression.

It is well-known what can be accomplished by specially-directed training. How endurance may be increased, how muscles may be strengthened, how lung-capacity may be enlarged, how even the general frame may be further developed. Even sight, hearing, touch are susceptible of improvement.

If, then, by proper exercise capacity can be raised above the individual normal, may it not by lack of due exercise be brought below that normal, and in time to positive degeneration?

We have all experienced that when, for some reason, chewing must for a while be done on one side of the mouth, the other will feel weak and lame. Now, if exercise be curtailed on both sides, we can readily see how a slight weakening may take place. Multiply this by generations, and an appreciable result will be had. This may serve as an illustration of deteriorated function.

I have repeatedly noticed that the teeth of one jaw opposite to spaces left by extraction in the other were badly decayed, while the teeth in the immediate neighbourhood which had opponents were perfectly good. This illustrates deterioration of organ from disuse.

To make generalized statement of the above we may say,—

If exercise of function is divorced from organ, the tendency will be towards deterioration of function, and reflexively deterioration of organ. Hence it may be laid down as a law that it is the degree of functional exercise that determines the state of health, working capacity, and structural condition of the organ.

It will be found that where a people is of pure type, does not intermarry too closely, lives on plain food, which to be comminuted requires a positive effort on the part of the oral mill, the teeth will be of good quality. The Scotchman exercises his chewing apparatus on coarse, hard food ; in some parts of Germany the well-known pumpernickel (black bread) thoroughly tests the efficiency of the native grinders ; the South Russian, between meals, chews the hard seed of the Turkish sunflower; the North Siberian eats a coarse black bread, and after meals chews spruce-rosin ; the Egyptian and the Arab live on coarse barley bread with almost no meat ; our Indian has a meat diet with but little bread, which, however, is coarse; the Terra del Fuegian has large, strong teeth which perform their whole duty on very hard food. All these peoples, where they lead a simple life, comparatively free from strong drink and hereditary encumbrance, have but little, if any, use for the dentist. Those in civilization have, of course, greater need of his services. Where, for example, rice is the "staff," supplemented by other soft food, as among Oriental nations, socket-catarrh and decay of the teeth are more frequent.

Of all peoples, we Americans are *said* to have the greatest need of the ministrations of dentistry. With us are to be found almost all the elements concerned in bringing about dental deterioration. By descent we are a great mixture. Our life is a constant nerve-strain. As James Stirling says, "The deepest-rooted cause of

American disease is that overworking of the brain and over-excitement of the nervous system, which are the necessary consequences of their intense activity." Our city population soon reaches the condition of Rufus Choate, who, being warned that he would by his overwork soon break down his constitution, replied, "Good heavens, my dear fellow! my *constitution* was all gone years ago, and I'm living on the by-laws." Our food is multifarious and of soft preparation. Even if it were simple and hard, we would be too much pressed for time to chew it. Hence our teeth have a "plentiful lack" of functional exercise. It is no argument to hold up to us the Eskimo, as has been done, and say, Here is a man that lives on blubber, which does not tax the dental organs, and yet he has no dental bills to pay. In the first place, this interesting individual's diet extends beyond blubber. He lives on reindeer, geese, seal, walrus, etc. His teeth crack many a small bone. Furthermore the Eskimo's forefathers from the "time whereof the memory of man runneth not to the contrary," lived on the same food and used their teeth in the same way as their successors now do. And so long as the latter continues to live in barbarian purity, however filthy that may be, so long will they dispense with the services of dentistry.

With us the case is different. Our forefathers lived nearer to nature than we do. One of the conditions that preserved their chewing apparatus was vigorous exercise on food necessitating it. This condition has become ameliorated.

For generations it has been the profitable study of the miller to produce a finely-ground flour; for generations it has been the remunerative object of the baker to make of this flour a soft, light bread; for generations it has been the ambitious desire of the cook to produce soft preparations of meat and vegetables. This being the case indifferent teeth are sufficient for present requirements.

Do not misunderstand me as to the miller. He is usually misrepresented. He does not materially rob the flour of its nutriment. Investigation proves that in removing the cortical layers of the grain only a slightly nutritious element is lost. The central four-fifths of the grain contains almost all the desirable elements, namely, gluten, starch, etc. The harm done is this, that, in the refining process, our masticating apparatus is cheated of its work; and incidentally, that a good stimulus to peristalsis is lost.

Stephen Girard is quoted as saying that teeth are like boys—when they had nothing to do they fell into bad habits. To keep his dental boys out of mischief he amused them with "hard tack." I have no doubt that our forefathers were fond of chewing the articular ends of small bones. To this day we occasionally meet persons indulging themselves in this direction; and many more would do so if they were not afraid of breaking their teeth. We cannot deny that the exercise would be beneficial.

A dentist, to illustrate the value of using the grinders on hard food, relates the following: "In a family of five children, whose parents . . . had good teeth, the three eldest, whose diet required something more than the average of mastication, have good and dense teeth. The mother, having great faith in bread and milk, insisted on getting a cow, and for twelve years from their infancy the two youngest children lived mainly on bread broken into milk. The result was in the main good health for the two boys, but lamentably inferior and sensitive teeth." The experiment was ended by putting the boys on hard fare, when a great improvement was noted.

Other things equal, tobacco chewers have better teeth than non-chewers. Why? Not on account of any known virtue in the weed, but because of the exercise involved. Chewing gum, if we stop to reflect, is not so reprehensible a practice. In fact, the young lady may justify her indulgence by claiming that the muscular effort expended is in the line of economic conservation.

Impairment of the General Health.

That there is an interdependent relation between the whole animal body and its parts is an easily observed fact. Every day the dentist has cases in which he can see how the general health affects the teeth. One way in which they plainly show thei sympathy with the lowering of the systemic tone is the lessened power of resistance they offer to the changed, vitiated condition of the fluids in the mouth and stomach. Catarrhal throat and nervous dyspepsia, for example, make sad havoc in many mouths.

The teeth, being of a structure that has not the power of restoration possessed by the soft tissues, will often bear permanently a record of profound systemic disturbance. Eruptive diseases, such as scarlet fever, small pox, even measles and enteric affections, will sometimes leave their indelible inscriptions.

In the adult, nerve-wear, brain strain, will at times so reduce the resistive power of the teeth that the dentist's restorative efforts become despairingly inefficient. Dr. Fothergill says in this connection, "The dental caries so prevalent, indeed universal, at the present day, is but a part of the general widespread failure of the digestive organs. . . . Whence comes the profound modification of the organic processes, the commissariat of the active or animal par of the body? It is the effect of modern life upon the nervous system." Dr. J. L. Williams has observed degeneration of dentat tissues as "a result of long-continued, intense mental activity."

Gout and rheumatism, with their particular effect upon the alveolo-dental membrane, tubercular, syphilitic, scrofulous taints, morphine habit, in short any affection or practice reducing neural energy which is followed by a disturbance of the nutritive repair, will have its due deleterious effect upon the dental organs. When we consider that in addition to its special troubles, our chewing apparatus is under the implacable tyranny of hereditary diatheses, it is burdened indeed.

Under the present head may be considered the changes wrought by removal to another country or climate.

The American dentist frequently has as patients foreigners that claim that, before immigrating, their teeth were in excellent condition. I call to mind among others a Swedish girl. She looked the picture of health. Her teeth were well arranged and had ample room. Yet extensive decay was manifesting itself, though she had been only two years in America. Prior to her coming here she was blissfully unconscious of having a chewing apparatus. Another patient, American, while in Paris pursuing art studies, had to make frequent visits to the dentist. When she went abroad, her teeth, I know, were in good repair. The French dentist informed her that she was sharing in the general experience of Americans sojourning in Paris.

These are of course individual cases, and should not be unreservedly taken as demonstrating a general fact. A grain of allowance must here be made for the complete change in the conditions of life. Then, too, worry and anxiety probably enter into consideration.

So far as I know there is nothing in any country or climate that will act in a directly harmful manner upon the teeth. It is the *change* incident to removal that may, through the general system, result in increased liability to dental affections.

It is well known that the children of European parentage in India have a very low degree of physical vigour. No doubt had these children been born in Europe they would have probably been equally vigorous as their parents. But the climate itself of India must not be thought a cause of physical weakness. Fine development and good teeth are found in the aboriginal population of any inhabitable country. It is the persons "not to the manner born," or such as hereditarily belong to another country, that are likely to fail in health, and through this, as has been observed, in their teeth.

PRENATAL INFLUENCES.

Much importance is attached, and justifiably so, to the attainment of vigorous health for women that are approaching motherhood. The heritage will be strong teeth and a strong systemic support. Dr. Rich, who has devoted much attention to the physical culture of women, observes, "Experiments have been made under the auspices of the French government, which proved conclusively that by increasing the health of the mother during pregnancy a marked effect is produced upon the teeth of the child. Fine teeth depend upon fine health of the mother. The benefits of vigorous exercise, proper diet, and the means of promoting a high condition of health are well known. Look at the mothers in our highly-civilised community, and what are they? They are delicate in frame, poorly developed, with soft muscles. Who ever heard of a fine horse being produced by a miserable dam ? There may be a scalawag father, but it is always necessary to have a fine dam in order to produce a fine horse. This principle exists throughout the whole animal kingdom, not excepting man." Dr. Dwinelle, another authority in matters dental, believes that the child comes into the world with too little phosphate of lime in his system, resulting eventually in poorly calcified teeth. He thinks that to obviate this defect the mother should receive a saturating phosphate treatment. For substantiation he cites illustrative cases in his practice.

Dr. Rich's opinion, if the necessary provision for hereditary influences (paternal as well as maternal) be made, is no doubt a sound one, and in thorough accord with natural conservation. The implied advice is conservative, in that natural—I may say physiological—methods are resorted to. The doctor places, however, too much of the blame for poor teeth on the mother. The father, too, is partly responsible for defective dental heritage.

CROSSING.

Dr. Brinton, an eminent ethnologist, in speaking of mulattoes, says, "It is well ascertained in the United States that they are peculiarly prone to scrofula and consumption, unable to bear hard work, and shorter lived than either the full black or the white. This is not owing to our climate, as the same results are recognised by the negroes of the Gold Coast, who for four hundred years have been in constant contact with the whites. In the West India Islands the mulattoes must be constantly reinforced by new crossings, or they disappear."

Such is the effect upon the general system. In a limited way the crossing of races, and of nationalities, will result in defective or irregular teeth. This observation has been made in the offspring of white and Indian parentage. The same may be said of the cross between the black and the white races. Even the teeth of children resulting from a union of Romanic and Germanic blood will often show, if not deteriorated tissual formation, at least irregularity of position, and that, as is well known, may lead up to positive lesion.

If we except the probable results of racial differences in the size of the jaws and the teeth of the parents, it is not likely that a cross between two pure types of races of sound physical development, living and brought up practically in the same climate, will have defective dental organs. In these days, however, such a case as just supposed would be hypothetical; most assuredly so as applied to white races.

The latter crossed with other races will undoubtedly confer upon the offspring a better brain capacity than the inferior type possessed, but at the expense of a lowered physical development. It seems to show that civilised white man has removed himself quite far from nature. Since, as soon as he comes in contact with people nearer his condition, he entails upon them the physical penalties of an artificial life.

This ends the consideration of the remote factors.

But little need be said of the *immediate factors* in dental deterioration. They are *want of cleanliness*, *abuse*,—as in cracking hard nuts, and in similar feats of sleight of teeth ; much *lemon-sucking*, and *eating* of *vinegar pickles* (schoo children offend in this way) ; *excessive indulgence* in acid phosphate ; *acid medicinal preparations*, as lime-juice used as a gargle or the careless administration of *the chloride of iron tincture.*

The *eating of sweets* in moderation is harmless, but carried so far that the stomach is soured thereby, or the appetite for necessary food is taken away, it may result in indirect, if not direct, mischief to the dental organs. *Sudden thermal changes*, such as the teeth are subjected to at the table, may become injurious to the enamel, if not to the pulp as well. It must be hardy material, indeed, that can stand the taking of a gulp of ice-water on a gulp of hot soup. *Mouth-washes* and *tooth-powders* that are recommended to radically whiten the teeth and prevent decay are a source of harm. Professor Elliott is said to have analysed one of these washes, and found it to contain eighteen per cent. concentrated *hydrochloric acid*. Another beautifying preparation is: water, one ounce; honey, two ounces; and *muriatic acid*, *one ounce*,—that is, twenty-five per cent. hydrochloric acid. The naïve directions are: "Mix, apply with a tooth-brush, and *rub vigorously*." If this does not whiten teeth, nothing short of extraction or death of the patient will.

To briefly summarize: Man owes the deterioration of his teeth (and, in a measure, of the related parts) to change in the mode of life; to change in diet, both as to character and preparation; to reduced general physical vigour; to weakening hereditary or peculiar maternal influences; to luxury, indolence, vice, capricious appetites, sleep-robbing, brain-fretting; to local abuse—in general, to the sins of omission and commission against hygiene; against the conditions that necessitate the presence of teeth.

Dr. Hammond, in a fit of pessimism, predicts that, at the present rate of increase in baldness, a thousand years hence the human race will be hairless. He might have added that, if the miller continues to improve the fineness of flour; if the cook continues to improve in the art of making dishes for the palate only, and to multiply the number of highly-seasoned, stomach-teasing compounds called "fancy dishes;" if the kitchen-stove continues to do our chewing for us; if we continue to dispatch our food by the watch, and, instead of insalivating the morsel, send it down under convoy of iced water or scalding coffee; if we continue to limit our physical exercise to the rocking chair or to the office stool; if we continue to shun the sunshine and crawl out after night-fall; if we continue to let, as Shakespeare says, "sweaty haste . . . make the night joint-labourer with the day," a thousand years hence our successors will be (I won't say toothless, that's nonsense, but) practically without bicuspids and molars, and the wearing of plates or bridges will have become as common as the wearing of shoes.

One of the Alfonsos of Spain is quoted as saying that if he had been consulted in the making of the world, better work would have resulted. I suppose if he had been called upon to assist in a palin-genesis of the world he would have either made man with an indurated gum to do duty for teeth, or constructed the latter so that when one is lost another would take its place in some such way as lizard-tails and crab-claws are reproduced. However, as Alfonso was *not* consulted, we shall be obliged to make the best of our lot, and—*let the dentist live.—International Dental Journal.*

Journalistic Memorabilia.

HAND DISINFECTION.

THE complete disinfection of the hands preparatory to operative work is so essential that the recent observations of Dr. Howard A. Kelly are deserving of the widest publicity. The common pus-producing germs, especially the *staphylccoccus pyogenes albus*, are found abundantly on the hands and about the nails of everybody. To remove them and render the hands perfectly aseptic is by no means easy. The most certain method, and therefore the one to be followed, seems to be the plan which Dr. Kelly advocates. Sixty-five experiments were made to test the adequacy of soap and water alone. The hands were thoroughly scrubbed with strong brown soap and hot water from ten to twenty-five minutes. In nine instances the hands were found to be aseptic, but in these nine instances the hands had been washed in bichloride of mercury solution the day before.

Immersion of the hands in solution of bichloride of mercury as strong as 1:500 was found to be in sufficient to actually destroy the micro-organisms. After immersion in this solution, the epidermis did not yield cultures, but if the hands were subsequently treated with a *sterile* solution of ammonium sulphide, living germs could be obtained from the epidermis. The bichloride inhibited the growth but did not kill the germs, so that when the mercury was precipitated by the ammonium sulphide, the germs immediately commenced to grow.

By similar experiments, lysol and also peroxide of hydrogen were found to be inadequate. The method which yielded the best results, and which in fifty experiments rendered the hands aseptic in forty-four instances, was the use of potassium permanganate and oxalic acid.

This method, as described by Dr. Kelly, is as follows:

"1. Scrubbing the hands, with especial attention to the nails—not more than one millimetre in length—for ten minutes, in water, frequently changed, at about 104° F.

"2. Immersion of the hands in a solution of permanganate of potash, made by adding an excess of the salt to boiling distilled water, until every part of the hands and lower forearms is stained a deep mahogany red or almost black color. They are then transferred at once to a saturated solution of oxalic acid until completely decolorized, and of a healthy pink color. This decolorization is accompanied by a sense of warmth, due to chemical reaction, and a sharp stinging wherever there is any abrasion of the epidermis.

"3. Washing off the oxalic acid in warm sterilized water."—*Journal American Dental Association.*

Uses for the Oxysulphate of Zinc.

Dr. W. D. Miller, of Berlin, says: "The oxysulphate of zinc is a material which is not as extensively used as it deserves to be.

The preparation he uses is Fletcher's Artificial Dentine.

He adds: "The one I use consists of a white or yellowish-white powder, oxide of zinc, and a syrupy, opaque liquid, whose exact composition I am unable to give. As I have been informed by the manufacturer, 'the artificial dentine is an oxysulphate in the same sense that the oxychlorides are oxychlorides; the hydrochloric acid in the basic compound is replaced by sulphuric acid, and it is really a basic sulphate of zinc with a small proportion of free oxide.'

"When mixed moderately thick it hardens quite rapidly, in fact as soon as it is in the cavity it is hard enough to undergo the necessary trimming. The time required for its setting can, however, be increased *ad libitum* by mixing it sufficiently thin. Like other preparations of its kind, it rapidly deteriorates in quality if any impurities obtain access to it, or if the bottles are not kept perfectly corked.

"When fully hardened it has not quite the hardness of plaster of Paris, but is a little tougher. In positions where it is not affected by mastication, I have known it to last as long as two years, though it is solely for temporary purposes that I use or recommend it. It is practically non-irritant; a quantity of the material mixed, being taken upon the tongue, produces about the sensation of a half per cent. solution of carbolic acid.

"1. For capping exposed pulps. When the pulp has been fully prepared for capping I mix a small quantity of the cement to such a consistency that when it is taken upon the point of an excavator it does not flow off from it, but still is sufficiently thin to hang down in the shape of a minute drop. If a drop of cement of this consistency a little larger than a pin head is brought into contact with the point of exposure, it spreads itself out over the surface of the pulp, adapting itself perfectly to its irregularities and forming a much more perfect covering than can be obtained with asbestos, pieces of paper, gutta percha or any other material which cannot be applied in a semi-fluid state; besides, what is of greatest importance, it may be applied without a trace of pressure.

"An antiseptic capping may easily be produced by incorporating the antiseptic into the capping material, though some substances interfere with the hardening. As soon as the cap has hardened (about two minutes more if the cement was mixed very thin), the filling may be completed. If it is a doubtful case, I finish the operation with *oxysulphate* and wait three or four weeks. If it is a fresh exposure and the pulp healthy, I finish with *oxyphosphate.* If finally I have every reason to exclude the possibility of a failure, I place a layer of oxyphosphate, over the cap of oxysulphate, and complete the operation with a permanent filling material at once. The directions for use accompanying the material appear to me to be fundamentally wrong; my manner of using it will, I am sure, give better results.

"2. In the operation of perforating or removing hard fillings from pericementitic teeth, I have found the oxysulphate to be of the greatest service. How painful if not unbearable for the patient, and how trying to the operator it is to operate upon a tooth which may be so sensitive that the slightest touch causes excruciating pain, we all know, and yet this operation may be made almost or quite painless. Dry the tooth to be operated upon as well as the adjoining tooth, on each side, with bibulous paper, then mix a large quantity of the oxysulphate, say half a thimble full, and plaster it with a broad spatula upon the lingual as well as labial surface of the three teeth, slightly pressing upon it so as to force it between the teeth. It hardens sufficiently in one or two minutes to fix the tooth immovably between the adjoining teeth. The ease with which the operation of removing the filling may then be performed is often a matter of surprise both to patient and operator. In these cases plaster of Paris may take the place of oxysulphate.

" 3. In like manner oxysulphate or plaster of Paris may be used during the operation of filling with gold, for fixing teeth which have become loosened, no matter by what process.

" 4. I also sometimes make use of the oxysulphate for pressing the gums away from the cervical margin of cavities, particularly in wedgeshaped cavities where cotton cannot be made to hold. Dry the cavity thoroughly and fill it with cement mixed rather thick, and when it has begun to harden press upon it with a pledget of cotton. The cement spreads out and forces the gums back at the margin of the cavity.

" 5. For enclosing applications on cotton of whatever nature I have found the oxysulphate vastly superior to gutta percha. Whether I have to make an application to an inflamed pulp, for the purpose of sterilizing the cavity, or disinfecting a root canal or devitalizing a pulp, or obtunding sensitive dentine, I almost invariably cover it with the oxysulphate. It is a very difficult matter to cover a pledget of cotton, well saturated with liquid, with gutta percha, particularly in a shallow cavity, but it may be very easily accomplished with oxysulphate. The necessary experience in the manipulation of the material is best acquired by making a few fillings out of the mouth. It is particularly in making applications of arsenic to the dental pulp that the manner of enclosing them has great advantages, as it admits of keeping a local anæsthetic constantly in contact with the pulp, and avoids the pressure which is too frequently a cause of severe pain following such applications.

" 6. I now and then use the oxysulphate for fixing metallic caps over the teeth in regulating appliances where they are to remain but a short time, also for temporarily setting pivot teeth. In short, any one who becomes acquainted with the material will find it so useful that he will wonder how he was ever able to get along without it."—*Dominion Dental Journal.*

THE DENTAL RECORD.

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Original Communications.

THE FIVE YEARS' DENTAL CURRICULUM.

By THOMAS GADDES, M.D., &c., Denv., L.D.S., Eng., and Edin.
Late Dean of the National Dental College, London, and also of the Dental Department of the University of Denver Colo., U.S.A.

The Medical Council requires four years as the minimum period of study for the Licence in Dental Surgery. The several licensing corporations also prescribe four years professional study.*

At this time when the medical student—freshman—enters upon a five years' course of study, and now that the question of instituting a five years' dental curriculum is being advanced, it would not be inopportune to direct attention to the practical working of the four years' system at present in operation.

In general terms, the study consists of three years' apprenticeship and of two years of general hospital work. The regulations of the General Medical Council state that one year's apprenticeship "may be counted as one of the four years of professional study;" that is to say: four years' professional study (which includes one year's apprenticeship) and the two years' apprenticeship (which are not counted in those four years), making a curriculum of *six* years.

That regulation was adopted by the Medical Council in July, 1882, ten years ago. Though the resolution was moved by Prof. Sir William Turner, its practical meaning is not in accord with the spirit of his letter to the Council.† He wrote:—"It seems to me only reasonable that some portion, if not the whole, of the three years to be spent in mechanical dentistry should be allowed." In the editorial article of the same number of the DENTAL RECORD * it was pointed out that "The shortest possible time in which the dental curriculum, according to the foregoing regulations, can be faithfully complied with, is six years," and, "If our interpretation of the resolutions of the Medical Council relating to this matter be correct, we doubt if it coincides with the principle Prof. Turner wished to adopt." However, the regulation has been in force for a whole decade. As one who had the direction of the professional education of many candidates for the L.D.S., this six years' course was never once suggested by me; indeed, I do not know of one instance in which it was, for deference, complied with. To require a studentship for six years was never intended by the Council, and this regulation has proved a dead letter absolutely, yet it was produced at a great cost of both time and money.

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*The R.C.S.I. requires forty-five months.

† *Dental Record,* Vol. II (August, 1882), page 363.

The Royal College of Surgeons of England required four years of professional study. This "four years' curriculum for a dental student required by the regulations of the College includes apprenticeship."

Those four years are to be occupied by the three years of apprenticeship and two years at general and dental hospitals—five years' work involved into four years. As to the precise manner in which this has to be done, or how the scramble may be accomplished, the College regulations do not specify. The announcement has been made that, by the Council of the College, "it is believed that candidates for the Dental Diploma clearly understand that the whole curriculum of professional study can be completed within the four years." † It has been stated over and over again in the pages of this journal, and also elsewhere, that "The attendance at the General Medical and at the Special Dental Hospital and School may be carried on simultaneously, and completed in two years. This plan of work takes up the whole of the student's time, and it is impossible for him to concurrently engage in any mechanical or other employment." And, on the other hand, Prof. Sir William Turner, in his letter already referred to, says "It will scarcely be practicable to go through an efficient training in the workshop, if during the same period the student's time is to be occupied in attending several courses of lectures, and in following the practice of a dental hospital."

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* *Ibid*, page 381.

† *Ibid*, page 364.

Furthermore, to "do" the whole curriculum of professional studies in four years is only possible when the pupil serves his articles in a town where the two hospitals exist. More than half the articled pupils do not enjoy those facilities; and having served their three years' apprenticeship, they must migrate to one of the scholastic centres to complete the remaining two years of hospital studies—in all *five* years. This is manifestly unfair. Why should one student, through the accident of his location, be compelled to spend five years and another only four? Apart from the injustice thus wrought, this involution of five years' work into four years, as these regulations permit, is prejudicial to the best interests of the student and the welfare of our profession. Where carried out, it must engender a slipshod method of work, an indifferent attendance at lectures, class examinations, hospital practice and workroom *instruction*, apart from the almost certain moral obliquity in signing the schedule of such a student. An official regulation which is so unequal in its application, and which entails so much that is undesirable—that is a very mild expression, ought to be modified. Why continue to call the curriculum one of four years, when it is practically, and in the great majority of instances necessarily, five?

Whilst effort is being made to inform the public that the modern dentist must be a qualified man, with a good education and a long period of training, I am sure the fact is very little known in the medical profession that the education of the dental licentiate exceeds, both in time and money, what the cost has hitherto been to the candidates for the conjoint examinations in medicine, surgery and midwifery. The average fees for the dental student amount to £180.—*i.e.*, premium (say) £100, Hospital Fees, £80, and the time five years. For the medical student £100, and the time (hitherto) four years.

In reading the abstract which appeared in the previous number of the RECORD, of the very excellent address by Mr. S. J. Hutchinson, at University College, I took special cognisance of this sentence.* "This (dental) curriculum must be preceded by the passing of an examination in arts, the same as for the conjoint diploma, but it only requires four years instead of five." True, the regulations of the Licensing Corporation stipulate four years, but, I ask, how, with the existing and almost universal apprenticeship system, is the work to be done in that time?

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* *Ibid*, page 440.

NOTES ON A CASE OF TRANSPLANTATION.

By Frederick J. Bonnalie, L.D.S.

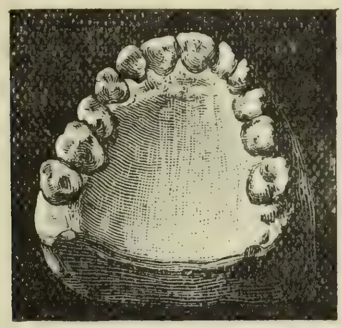
Two sisters, aet. respectively 15 and 11 years, applied to me for treatment in June, 1891.

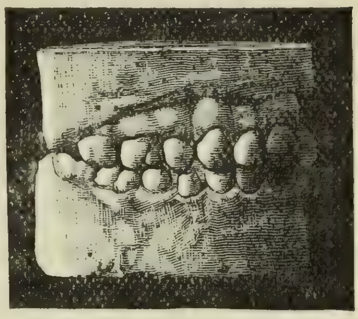
The elder sister presented a crowded condition of the teeth in the upper jaw generally, but more marked upon the right side. On further examination I found that the two right upper bicuspids were irreparably decayed.

The younger sister also presented a crowded state of the upper jaw, the left upper canine being thrown out of the arch by the very forward position of the first bicuspid. To correct this irregularity I unhesitatingly advised the extraction of the first bicuspid. It then occurred to me to transplant this perfectly sound bicuspid from the younger sister's mouth to the socket of one of the decayed bicuspids of the elder sister.

After injecting cocaine I accordingly extracted the second right upper bicuspid from the mouth of the elder sister, and a few minutes later the sound first left upper bicuspid from the younger sister. I was fortunate in finding that the root of the first bicuspid was single, and corresponded very closely both in size and shape with the root of the second bicuspid. I now merely immersed the sound bicuspid in a solution of perchloride of mercury, about 1 in 2,000, and having thoroughly syringed out the socket with warm water, slightly antiseptic, I firmly and gently pressed the tooth into the vacant socket, I now asked my patient to gently close her mouth, and found the tooth accommodated itself to the bite fairly accurately, I then temporarily tightened the tooth to its neighbours, although this precaution seemed hardly necessary, as it had become wedged in quite firmly. Having then taken an impression, I made a small vulcanite splint, capping the transplanted tooth and the teeth on either side. The splint was retained as a support for five weeks, being carefully removed by myself at intervals for cleansing purposes. At the end of that time the tooth was quite firm and has remained so ever since.

The operation caused no pain whatever owing to the previous injection of cocaine, a slight uneasiness and soreness being felt for about a week after. Six weeks after the operation I removed the first bicuspid which was in front of the transplanted tooth, and then drew back the canine and lateral by means of elastic bands attached to a metal band placed round the six-year molar, which, rather strangely, was perfectly sound.





Of course it will be seen from the accompanying engravings that the original mesial side of the tooth is now distal—this rather helps the bite.

I saw the case a few days ago, fifteen months after the operation, and the tooth is still quite firm and comfortable; the irregularity almost entirely removed, the canine and lateral having fallen back, and the appearance of the mouth is much improved.

I might add that the pulp of the transplanted tooth is of course quite dead, being insensitive to the application of a hot instrument, but the tooth is not in the least degree discoloured.

FILLING MATERIALS.*

By D. P. Gabell.

Mr. President and Gentlemen,

In my paper this evening I intend to describe the various materials used for filling teeth, so as to answer that very important question, "Which filling shall I use?" and, therefore, I think that at the outset I ought to notice what the qualities are which we should desire in a substance before we called it a perfect filling material.

It should be durable, that is, it must resist the action of the oral fluids in health and disease, be tough and hard to resist mechanical injury and to take a good polish, and it must not become porous, shrink, or alter its form when set; have a good appearance, resembling the tooth in colour, polish and translucency; be easily adaptable, plastic, adhesive and moderately quick setting; non-irritant and a non-conductor of thermal and electric changes; and should possess a certain amount of hardening and antiseptic properties towards the tooth structure.

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*A paper read before the Students' Society, Dental Hospital of London.

Needless to say we do not possess any one material having all these properties, and so it is the object of this paper to show how far each of our filling materials approaches this ideal, and in which qualities it is lacking, so that by a careful application of this knowledge to the requirements of each case, we may obtain the best result possible for our patients.

The materials from which we have the choice are: Gold, Platinum, Tin; Amalgams of various compositions; Oxyphosphate-chloride and Sulphate of Zinc; Gutta-percha; Glass, Porcelain, Vulcanite, and Gums, and also the various combinations of these materials. I have purposely omitted the various root dressings, because they might very well form the subject of another paper, and their proper treatment would render this paper a great deal too long. I shall now proceed to treat each material more in detail:—

GOLD as a filling material, at present, stands first. When well condensed, it is not affected by the oral secretions, is tough, takes a good polish, is not porous, and does not shrink or change its shape. It is generally used in the form of a thin foil, folded and cut into tape or cylinders, and may be either cohesive or non-cohesive. It may be as well here to say a few words with regard to cohesion, which is a force possessed by all metals to a greater or lesser extent, the force which holds together the two freshly cut surfaces of a lead bullet when placed in opposition, being a familiar example, as is also the welding of iron to form hoops, &c. But before this force can come into play certain conditions have to be observed; these are:—1st, That both surfaces must be perfectly pure and clean. 2nd, They must be brought into close contact. 3rd, A certain amount of pressure is necessary. Hence, gold used for cohesive work must be pure, requires to be annealed in or to drive off any moisture or gases from its surface, and also loosen its molecules, and should be regularly packed, not placed in the cavity anyhow, and be subjected to a firm, regular, not necessarily very heavy, pressure. A rough surface is also found to favour cohesion, but is not necessary, as is proved by Dr. Herbst's method of filling, and can easily be carried too far by the use of coarsely serrated pluggers, which can never produce such solid results as the finely serrated ones.

As regards the comparative value of tape and cylinders I think that much depends on the shape of the cavity and the amount of care exercised, for if cylinders can be packed in regularly and condensed at right angles to their axes, and not the side of one, on to the end of its predecessor, the results are equal to those obtained with tape, but when this is impossible to accomplish I believe tape to be the better form to use, at least for finishing. For non-cohesive work we use foil, the surface of which has been subjected to the action of gases, in order to prevent cohesion, though if it be annealed it is rendered cohesive, so that a filling started non-cohesively can be finished cohesively if due attention be paid throughout to keeping the gold clean and dry.

The appearance of gold is against it, for it is neither translucent nor the colour of the tooth, though, on the other hand, it is the only filling that can give translucency to a dead tooth, and when finished with a dull polish is not so very conspicuous, and, at least, is eminently respectable. As to working properties it has both faults and merits, for it requires much time, patience, and skill to produce a well-fitting durable plug, and, not being adhesive, does not support thin walls well, and also requires the sacrifice of much tooth substance for its insertion. Yet, its strength and cohesive powers permit of its being contoured to restore the shape of the tooth, and, skilfully used, produces a hard, well-fitting, smooth, durable plug, which in a good tooth will remain unchanged for many years. Gold, though a non-irritant, is a good conductor of heat, so that when possible the cavity floor should be covered with cement. It has no hardening effect on the tooth substance. Cohesive fillings are not antiseptic, and non-cohesive are not reliably so, so that for teeth of poor structure, children's teeth, and where the teeth have no attention given them, gold is perhaps not the best material to use.

Gold and Platinum can also be used in the form of caps struck up to fit the cavity, and then fixed in with osteo and the edges well burnished. As regards the respective value of cohesive and non-cohesive gold, I think that in a suitable cavity with four sound walls, the non-cohesive ought to be used because of the far greater convenience to the patient; and when well condensed and burnished I do not regard it as an inferior filling. Indeed, the probable antiseptic properties of unannealed gold, the greater ease with which it can be condensed against the walls, its lesser conductivity, and the avoidance of the rubber dam and mallet, and the time saved might well out-weigh any slight defect as to hardness.

TIN, as a filling, is inferior to gold in several respects, and has few advantages over it. It is much softer, is non-cohesive, and by some is said to oxidize and crumble at the edge, it also turns black in a short time. Its only advantages over gold are that it is softer, less conductive, cheaper, and has some slight hardening effect on the tooth. For these reasons it is sometimes used at the cervical part of a large cavity, the top part being filled with gold, and also in crown cavities in molars, though its softness renders this practice open to criticism when there is any masticating strain upon it. Freshly prepared tin is slightly cohesive, but not sufficiently so for us to place any reliance on.

GOLD AND TIN combined by placing a sheet of tin foil between two of non-cohesive gold and then using them either as cylinders, rope or tape, make a very useful filling. It is very durable, is not affected by the oral secretions, except that after a few months the filling appears to have become one homogeneous solid mass, which has acquired a very dark appearance, though no shrinkage or change of form has taken place. It is very applicable to deep cavities having sound walls, as it mats together very readily, and can be even built out into a contour if required, and its softness renders it easily adaptable to the cavity. It is best finished with cohesive gold, as this renders the masticating surface hard and avoids the black appearance. It is indeed a very useful way of saving time to start all large golds going beneath the cervical margin with this compound, if it does not show.

AMALGAMS consist of the combination of either one or several metals with mercury, which, when set, form hard metallic masses. There are very many different makes, the composition of which seem very doubtful, the chief constituents being, Silver, Tin, Copper, Gold, Zinc and Platinum, the bulk of a polymetallic amalgam usually consisting of Tin and Silver in about equal proportions, and a little gold or copper to hasten the setting, reduce the shrinkage, and give a better edge strength. The copper amalgams consist of about 3 parts of freshly pptd. clean

Cu. × 6-7 parts of Hg.

with a little nitrate of mercury to hasten the setting. After the two have been well mixed and washed, the excess of mercury is squeezed out and the mass made into small pellets.

Palladium amalgam consists of

1 part Palladium and 3 parts Mercury.

The various amalgams possess several advantages over gold, though generally inferior as regards appearance, shrinkage and strength. They all, with the exception of copper, resist the action of the oral fluids, and are hard enough to take a very fair polish and to resist mastication, but they are all more or less defective in edge strength, so that if not brought to a square finish they are very liable to fail at the most important part, viz., the edge. Sullivan's amalgam does both wear under mastication and also dissolve away, though, except at the cervical margin, the tooth seldom recommences to decay, and I believe that large cavities, and cavities on the masticating and buccal surfaces of molars, may be well and lastingly filled with Sullivan. The appearance of an amalgam is one of its chief defects, for they all darken on setting, due to the copper and silver sulphide they produce. All copper amalgams turn black, "submarine" dark, and "contour" grey (I mention these as being those in use in the Hospital, and I believe most largely in England); the darkening of the two latter is rendered less obvious if they are well burnished and kept clean.

The ease with which an amalgam can be inserted is its greatest advantage, because it saves time and trouble and also allows us to save teeth which we could not fill with gold, for though it is not adhesive to the walls, yet a well burnished-in amalgam does not require very much undercut to retain it, and in places very difficult of access it insures a far better result than gold would in the hands of the large majority of operators. The tendency of amalgam to shrink and become spheroidal, though practically absent with Rogers' and Sullivan's amalgam, is a very great misfortune, and greatly reduces its value as a filling material. It can be overcome to a certain extent by cutting the cavity as spheroidal as possible, and by using the first part of the filling moist and the last part dry, burnishing with stiff instruments and good firm pressure.

Copper amalgam not only turns black itself but usually also darkens the tooth, turning a dead tooth almost black, it at the same time hardens the dentine and renders it distinctly antiseptic, thus preventing decay even when the filling has partially dissolved. These changes are brought about by the conversion of some of the copper into copper sulphate, which then infiltrates the tissue and becomes the black sulphide. Another objection to this amalgam is that it requires a long time to harden, and thus is liable to be bitten out, or the edges spoilt if the patient neglects your warning to let it alone for a full two hours after insertion. Copper amalgam when prepared very pure and used very dry, though giving more trouble in its manipulation, produces better results than when used softer, as it shrinks and wears less, and though it becomes absolutely black itself it does not discolour a live tooth, and when thus used in back teeth I think that the sharp demarcation between the black and white looks very neat and good. No soft dentine must be left, or discolouration is inevitable. The discolouration of the tooth and filling are said by some to be in inverse ratio, and that the lighter coloured copper amalgams wear most.

Copper amalgam is also said to have a beneficial action on the pulp and to prevent putrefaction when it dies under the filling.

As regards the very many different amalgams in the market, I must admit I know very little, but perhaps a comparison of the properties of four of the most important may be useful, thus :—

Palladium amalgam expands on setting, turns black, does not blacken the tooth, and sets almost at once.

Copper amalgam (Sullivan's) does not shrink appreciably, turns black, blackens the tooth and hardens it, sets slowly, is antiseptic and liable to wear away.

Submarine (Flagg's) shrinks a little, darkens, stains the tooth but very slightly, sets moderately quick, and has a good edge strength.

Contour (Flagg's) shrinks, darkens less, does not stain tooth, sets quick, and has the best edge strength.

Some operators recommend the use of gold cylinders to remove surplus mercury and give a nice finish to amalgams ; the cylinders being put into the scrap box.

Gold and Amalgam.—A large cavity may be filled with amalgam almost full and then finished with gold, either after the amalgam has set, or at once, by removing the surplus mercury with tin cylinders and then packing in gold and finishing cohesively. But this method has very little to recommend it except that it perhaps saves time and has a better finish than an all-amalgam filling.

Osteos.—Under this generic title I include the oxy-phosphate, chloride and sulphate of zinc, and also, as being very closely allied, "Fletcher's Artificial Dentine" composed, I believe, mainly of gum and zinc sulphate. They are all destroyed by the action of the oral fluids, though in some mouths when kept clean, and not in a position where the mucous will collect, they last very well ; the reason of their quick solution being, that they are attacked by both acids and alkalies, the former overcoming their weak chemical union and dissolving the oxide, and the latter neutralizing the acid and so letting the zinc oxide free, the action being rendered quicker by the hygroscopic nature of the filling. This latter objection is said to be greatly overcome by the use of copal varnish, and Dr. Bonwill advocates the impregnation of the filling with paraffin, which, according to him, renders it quite insoluble. Osteo fillings are also unable to bear any great masticating strain, and so are not capable of any extensive use as filling materials by themselves, but when protected by some more durable filling they prove of very great service to us in many ways. First as a support to the thin wall of a large cavity, to which, by their adhesive property, they give great strength ; also as a thin lining they prevent the discolouration of a tooth by an amalgam, or the showing through of any dark filling, and protect sensitive dentine from thermal changes ; they may also be used to reduce the size of large cavities before using gold, and also to obtain a shape suitable for the insertion and retention of a gold filling.

Messrs. Miller and Cunningham also use osteo mixed with copper-sulphate as an antiseptic filling to be placed over nearly exposed pulps where a little soft dentine has been left. Great care must be exercised with the use of copper-sulphate, as it is capable of turning a dead tooth black in three days. Osteo can also be mixed with oil of cloves and used as a sedative dressing in similar cases.

The appearances of a well chosen and manipulated osteo filling are all in its favour while it lasts, except that it has no translucency. The working properties of osteo are also very good, it being easily adaptable, adhesive and quick-setting. Osteo fillings are said by Mr. Flagg to shrink slightly, but, for myself, I have never been able to verify this, and really somewhat doubt it. I have at present only spoken of the osteos as a class, and I shall now endeavour to give you some idea of their separate characteristics.

The oxy-chloride when mixed is fluid, caustic, antiseptic when fresh, strong, hard, coagulates albumen and is very soluble.

The oxy-phosphate is pasty when mixed, less irritant, not antiseptic, fairly strong and hard, does not coagulate albumen, and is the least soluble of these cements.

The oxy-sulphate is much less used, is non-irritant, not antiseptic, soft, and rather soluble.

The "Artificial Dentine" is fluid or pasty when mixed according to the use required, is non-irritant and non-antiseptic, is weak, soft, and very slow-setting.

Thus, if an osteo must be used on the surface the oxy-phosphate is best, also when used near the pulp. If it is required to support weak walls or as a root dressing use the oxy-chloride. If it is wanted to cap a nerve, to hold a tooth—suffering from periostitis—whilst operating, or as a temporary dressing, use artificial dentine. For the latter purpose a little of the powder mixed with carbolic acid and a little teazed-out wool is an excellent dressing, as it requires no heat or pressure in its application, and is both antiseptic and easily applied. The great rapidity with which some osteos set is liable to prove troublesome when filling awkward cavities, and to obviate this it has been recommended to use a nickel-plated copper slab and nickel spatula for mixing, both being cooled first; the reason being that the generation of a certain amount of heat is necessary before the mass can set, and that the accumulation of this heat greatly hastens the process, so that by using a good conductor you can prevent its setting for half an hour.

Before passing on to the combination of osteo and amalgam I must state that Dr. Miller totally denies the power of oxy-phosphate to obtund sensitive dentine, and has grave doubts as to its power of supporting weak walls, for which purpose he prefers the oxy-chloride; he also states cases where death of the pulp has occurred under an oxy-phosphate, and is inclined to attribute this to the action of this filling.

OSTEO AND AMALGAM.—This combination is very useful, enabling us to use good colour and edge-strength amalgams, without fear of their shrinkage producing bad results, and also being adhesive it has many of the advantages of osteo. It is made by first mixing the amalgam in the usual way and dividing the mass into two parts, one very dry for the body of the filling and the other for facing it. Then mixing some slow setting osteo moderately thin and with a stiff spatula working in the dryer amalgam till the whole forms a dark, sticky, plastic mass of an homogeneous consistency; about one part osteo and three parts amalgam is the usual percentage. This should then be placed in the cavity and adapted to the walls to within a minute distance of the free margins and the cavity filled and contoured with the remaining pure amalgam before the first has quite set. The filling thus produced does not shrink or change its form, supports weak walls, requires very little undercut, and if made with "contour" amalgam has all the advantages of appearance and strength of that amalgam. The appearance of course differs with the amalgam used, and when not veneered over it wears rough and is always dark, though it still protects the tooth. It unfortunately is surprisingly conductive to thermal and electric changes, and if used in thin wall cavities shows through dark. It requires to be put in quite dry and attention paid to the burnishing of the surface, to the body of the filling, or the two will readily part.

Gutta Percha.—The gutta percha as we use it is not of course the pure article, but has been bleached and had various materials, such as silica, glass, zinc oxide, &c., added to it It is used both as a permanent and as a temporary filling, the gutta percha used for the former being much harder and containing more foreign matter than the latter which is only required to hold in dressings, protect sensitive dentine under metal fillings, and as a trial filling in doubtful cases. It resists the action of the saliva, but is too soft to stand mastication, and though not irritant itself, by its slight shrinkage it sometimes admits moisture and so renders a cavity extremely sensitive and allows decay to continue. In cases where a tooth has to be filled with cement, it is always best to fill the top part only with osteo and then to fill at the cervical margin with gutta percha, the former being the strongest and having the best appearance, whilst the latter best resists the solvent action of the oral secretions.

As a filling for erasion cavities gutta percha answers very well in the front of the mouth when gold can not be used. Great care should be taken not to overheat the material as this destroys it, only sufficient heat being required to render it soft and sticky, and besides, the placing of a hot piece of gutta percha on a sensitive tooth is extremely painful to the patient, and of no advantage to the operator.

Gutta percha should not be used to line a cavity with when gold is going to be used, as it is impossible to properly condense the gold on it, and pressure on the pulp is very liable to follow. When using it under amalgam care must be taken not to use too much, or to let the amalgam rest on the gutta percha, as in either case pressure on the pulp may result either from the ingress of moisture or from mastication. Also in teeth where oil of eucalyptus, peppermint, or cloves is being used, care must be taken that only a very little remains, or it will dissolve the gutta percha and a leak will result ; a little of these oils is said to have a beneficial effect.

Porcelain.—Porcelain used as an inlay is perhaps the most perfect approach we have to the natural appearance. But, unfortunately, though it is itself very durable, yet we have no permanent cement by which to fix it. It is also of only a very limited applicability, requiring as it does so much sound tissue to support it, though by means of metal pins and building up part of the tooth with gold or amalgam, its usefulness is being greatly extended. Perhaps when its use is more practised by dentists and dental students, and thus greater skill obtained, we shall think more of its durability than present results allow us.

Glass.—Glass also is a very perfect imitation of the tooth substance, though more skill is required to obtain an equal result to porcelain. The same objection as to durability holds good with glass as with porcelain, and perhaps to an even greater degree. The main advantage of glass over porcelain is that it is applicable to a more irregular shaped cavity; though its application, apart from shallow labial cavities, is more limited than the latter. I prefer the use of porcelain where possible because I think a better fit can be secured than with glass.

Vulcanite.—Vulcanite has also been used as an inlay, a piece of rubber being made to fit the cavity and secured with pins and cement. It appearance is inferior to both the last two, but it is easier of adaptation, and so may be useful in large molar cavities.

Gums.—For the purpose of temporary dressings, when durability and appearance are not required, the solution in ether or alcohol of the various gums are often very useful. When loose dressings are required or the insertion of gutta percha is too painful they are specially indicated. They are inserted on cotton wool and the evaporation of the solvent precipitates them in its meshes and so forms a water-proof covering.

In conclusion I must thank you all for the kind attention you have given to my first attempt at public speaking.

REPORTS OF SOCIETIES.

Student's Society, London Dental Hospital.

Ordinary General Meeting, held October 10th, 1892, Edward Preedy, Esq., Vice-President, in the chair. The minutes of the previous meeting were read and confirmed.

The following gentlemen were proposed as members of this Society by Mr. W. S. Holford, and seconded by Mr. Trevor Hankey:—S. T. Wale, W. S. Newel, H. W. Norman, C. Cannell, E. K. Cannell, S. T. Rooke, M. P. Powell, H. Nicholson, N. H. Lean, E. Picton, C. Talintyre, G. E. Wilson, R. Watson, J. Nicol, H. G. Newland, J. H. Mathews, E. H. Mountford, A. C. Strand, C. E. Carter, W. Johnston, E. E. Cardwell, J. H. Gartrell, J. Humphreys, G. S. Jones, C. S. Prideaux, C. G. Pearse, G. E. Frost, N. G. Bennet, and G. H. Harden.

A vote of thanks was proposed to Mr. Willis by Mr. Bullen, and seconded by Mr. Morley, for presenting a number of back journals of the British Dental Association.

The following gentlemen were balloted for and duly elected:—Messrs. E. E. Young, S. J. Hankey, H. W. Hardy, R. F. Lane, S. E. Dunkin, W. J. Leigh, E. H. A. Mackley, H. E. Mackley, H. C. Reeves, H. Blake, A. E. Bettridge, and W. Rispin.

On casual communications being called for, Mr. Dolamore presented to the Society an illustrated menu of a dinner given by the Students' Society of the Dental Hospital of Edinburgh.

Mr. CLARENCE showed a second upper molar tooth with two distinct roots, and remarked upon the trouble a student would have in searching for the remaining root; he also presented and described a piece of necrosed bone which had been taken from the lower jaw of a man aged 49, the result of a fracture through the use of the key instrument.

THE PRESIDENT then called upon Mr. D. P. Gabell for his paper upon "The different Fillings used in the Mouth." See page 485.

Mr. TISDALL in opening the discussion wished to ask Mr. Gabell if an osteo and amalgam filling became porous in the mouth by reason of the osteo becoming dissolved.

Mr. BULLEN asked what was the best material for fixing in glass inlay fillings.

Mr. HALLIDAY observed that a tin and gold filling expanded when in constant contact with the saliva, and that a gutta percha and amalgam filling would not remain water tight.

Mr. MELLERSH said he did not think that amalgam fillings wore away at the cervical edge, and suggested the use of yellow lint for fixing in temporary dessings.

Mr. GOODMAN remarked that no mention had been made of palladium fillings expanding in a marked degree, he thought that the mercury in amalgam fillings should all be squeezed out, and that amalgams at the commencement of filling should be used wet and finishing with the material very dry; he did not believe in the conductivity of osteo and amalgam fillings.

Mr. Mordaunt asked for an opinion regarding gutta percha as a means for fixing glass or porcelain inlays.

Mr. Love mentioned a plaster of Paris filling which he had seen, and remarked that nothing had been said about the strength of the blow used in gold fillings; he suggested that gutta percha might be used for fixing inlays, and that with a porcelain inlay some means might be adopted by which an undercut or dovetail could be made to give extra strength to its retaining powers.

Mr. Hankey also described a plaster of Paris filling, but the patient had been in the habit of inserting this herself; he also mentioned that osteo added to teazed-out cotton wool made a very good filling.

Mr. Gillett could not see the reason of using gold cylinders for soaking up the surplus mercury when tin cylinders brought about the same end and were not so expensive; he also described a case in which a Flagg's contour amalgam filling had turned the tooth black.

Mr. E. Gardner thanked Mr. Gabell for his practical paper; he did not think that osteo and amalgam fillings went porous when properly faced with the amalgam itself, and thought that copper amalgam fillings went at the cervical edge mostly when the mouth produced that thick soppy saliva, but in the case of a healthy mouth the edges remained satisfactory.

Mr. J. P. Smith described sulphur as a great filling material in the future, inasmuch as its remarkable powers of resistance were daily seen in the mouth, he had also seen plaster of Paris used as a temporary filling for sealing in arsenic dressings, he believed that in order to get the best result from amalgams they should be used just at the point of setting and then burnished.

Mr. Mordaunt, in reply to the last speaker, showed that sulphur could be made plastic by melting it, and then pouring the fluid into hot water.

The President did not think that amalgam fillings should have any surplus mercury remaining when finished, and deprecated the use of tin cylinders, as in taking up a certain amount of mercury a layer of tin was left on the filling, thereby leaving a softened surface, he also advised that tin foil should be burnished upon the amalgam which would then be able to keep a good colour.

Mr. Prideaux suggested that in commencing a gold contour filling a Wolrab cylinder or two should be inserted into wet osteo previously placed on the floor of the cavity, he advised the use of gold cylinders in wiping up the surplus mercury from amalgam fillings.

Mr. Rankin observed that a good amalgam filling was obtained if the surface were wiped with a piece of wet cotton wool and then burnished, at the next visit of the patient the filling should again be burnished.

Mr. Clarence advised that all odd pieces of copper amalgam should be kept and used over again, by this means a great deal of shrinkage was prevented.

Mr. Moseley did not think that the ink test showed the reliability of osteos capped by gold, as there were not the acids to contend with as in the mouth.

Mr. E. Gardner said, regarding his experiments in gold-capped osteos placed in the ink pot, he had found that the dentinal tubes had been stained, but the osteo itself had remained intact.

The President then called on Mr. Gabell to reply, who, in rising, said: that he always, where possible, faced osteo and amalgam fillings, and that even when left they only became rough and did not dissolve. As regards inlays, he preferred chloropercha as a fixing agent, and when possible cut a groove round the side of the porcelain ; he hoped that Mr. Smith's and Mr. Mordaunt's hints with respect to sulphur might prove useful. Sullivan's amalgam he thought did dissolve at the cervical margin even in clean healthy mouths, but when old pieces were used the results were better than when using new. With regard to plaster of Paris, it were scarcely worthy of place as filling material except for roots, and the use of cotton wool and osteo as a permanent filling was of exceedingly doubtful value, though as a temporary dressing it might prove useful ; osteo mixed with pieces of gold was also a useless expenditure of trouble, and scarcely a material to be used by respectable dentists. The practice of burnishing amalgams whilst setting, and also of carefully finishing when set, were practices always to be adopted when possible, and the preference given to gold cylinders over tin for finishing was on account of the far better surface they left behind. Mr. Gabell also wished to thank Mr. Gardner for his experiments proving that osteo did not shrink. The probable reason of contour amalgam blackening a tooth must arise, he thought, from a slight admixture of some copper amalgam left in the mortar ; oil of cloves was certainly a very useful drug to mix with the sulphate of zinc for a temporary dressing.

The President then proposed a vote of thanks to the reader of the paper and to those gentlemen who had brought forward casual communications, and announced that the next meeting would be held on November 14, when Mr. R. W. Gillett would read a paper upon "Points on Extraction."

The proceedings then terminated.

Dental News.

The World's Congress Auxiliary of the World's Columbian Exposition.

Department of Medicine.—General Division of Dental and Oral Surgery.

PRELIMINARY ADDRESS OF THE COMMITTEE ON A DENTAL CONGRESS.

It is the aim of the World's Columbian Exposition to gather together the evidences of the material progress and achievement of the civilization of the world, and so arrange them that every department of human endeavour may be studied and examined through all its various grades of development.

It is also their desire to represent the intellectual and scientific development and achievement of the entire civilized world by a series of great congresses, to be held during the progress of the Exposition.

In pursuance of this object the World's Congress Auxiliary was organized by the World's Columbian Exposition, and it has received the recognition and support of the Government of the United States.

It is the plan of the World's Congress Auxiliary to bring into communication, through these congresses, the best thinkers and workers in every department of knowledge, including religion, science, philosophy, literature, art, agriculture, trade and labour, etc., and by the presentation and interchange of ideas, methods, theories, and practical experiences to promote the advancement of all that is noblest and best of our present civilization. Committees have, therefore, been appointed to organize a series of congresses, representing nearly every field of thought, and of speculative and practical endeavour.

In the field of professional achievement, medicine and surgery, in their various special applications, will form a very large and interesting feature of the World's Congress Auxiliary.

Dentistry is an important department of medical science, and an outgrowth of our modern civilization. Its present perfection is in considerable degree due to the thought and labour of American minds.

The history of modern dentistry is covered by a period of less than two generations, and yet it has advanced from the rude operations practised by the blacksmiths and barbers to one of the most scientific and exact of the specialties of the healing art.

Scientific dentistry had its birth in the United States of America. This country has the proud distinction of having organized the first school for the teaching of dental science, and the establishment of the first periodical journal devoted to the interests of dentistry, while very many of the most useful appliances and scientific methods have originated on this side of the Atlantic.

It is, therefore, eminently fitting that dentistry be represented at the World's Columbian Exposition by a display of the progress which has been made in the development of its materials, instruments, appliances, processes and methods of a practical nature, and in scientific research, literature, and professional education. With this end in view, the dentists of the United States took steps in August, 1890, to organize such a World's Congress, by the appointment of a General Executive Committee, to whom the whole matter of organizing and conducting the congress was referred.

The work therefore of the Committee on Dental Congresses appointed by the World's Congress Auxiliary will be chiefly in co-operation with that General Executive Committee, in publishing to the world from time to time the progress of the work of organization, in promoting the interests of the Congress in every way within their power, and keeping it in harmony with the general plans of the World's Congress Auxiliary.

Every effort will be made to secure the best talent in the presentation of scientific subjects and in practical demonstrations.

The World's Columbian Exposition, through its directory, will provide ample accommodation for all the various World's Congresses to be held in Chicago in 1893. The Memorial Art Palace now in process of erection upon the shore of Lake Michigan, and located near the centre of the city, will be devoted to this purpose. This building will contain two large audience rooms, with a seating capacity of about three thousand each, which will be used for the general congresses of the various departments, besides numerous smaller rooms, suitable for the chapters and sections of the congresses, thus affording for the Dental Congress ample accommodation for clinical demonstrations of a suitable nature.

During the sessions of the Dental Congress several popular evening meetings will be held, to which the general public will be invited. At these meetings, which are intended to be educational, illustrated lectures will be delivered by some of the most eminent men of the profession upon topics which are deemed to be of vital importance to the public. These meetings will be especially under the control and management of the World's Congress Auxiliary. When the suggestion of the advisory councillors of the Dental Congress shall have been received as to the most interesting and vital questions to be presented, a programme will be arranged for publication.

A cordial invitation is extended to the dentists of the world to take part in the scientific work of the congress by the presentation of papers and discussions, or demonstrations of new or improved methods and appliances.

America, and Chicago in particular, will have a hearty welcome for all who may come.

An earnest effort was made to bring the meeting of this congress in close connection with others of the department of medicine; but that effort having proved unavailing, arrangements have been effected under which the meeting of the dental profession will be held on or near August 17th, and is expected to continue during the week or ten days following. Definite dates and details will be given in the programme.

Dr. LAUDER BRUNTON, in the course of a lecture dealing with "Mastication," which he delivered at St. Bartholomew's Hospital, says—"It was a magnificent stroke of genius on the part of Sir Andrew Clark when he informed Mr. Gladstone that he had one mouth and thirty-two teeth, and that for every mouthful of food he took every tooth should have a chance, so that he should take thirty-two bites to every mouthful. And if the patient has lost some of his teeth, he should allow two bites for every missing tooth, and even that will not always do if many teeth have gone."

THE DENTAL RECORD, LONDON: NOV. 1, 1892.

TO BE CALLED DOCTOR AND TO BE RESPECTED.

THE Editor of the *British Medical Journal* has some rather pertinent remarks anent the adoption of the title of "Doctor" by dental surgeons. In Germany dentists who upon the strength of holding an American degree, such as the D.D.S. or D.M.D. have arrogated to themselves the title of "Doctor" have been hailed before the Courts and fined. In this country we already possess a very varied assortment of "doctors" who agree only in being bedoctored. To attempt to class even the medical doctorate into anything like uniformity would be hopeless. Still all doctors of medicine possess some general knowledge, their acquirements have been tested both as regards this and professional learning, but when we come to consider the "doctors of dentistry," we get into less certain regions. Many so-called American dentists are merely Englishmen who have gibbed at the very thorough curriculum our profession is safeguarded by in this country, failing to obtain the L.D.S. have gone to some inferior dental college in the States to return after a two years' course, and to assume the imposing title of D.D.S. We have pointed out before that no class of persons are more hurt by this iniquitous system than the *bonâ fide* Americans who are in practice here, and whom everyone welcomes, and duly respects when they conduct their profession in a seemly manner. But putting aside all sentiment, we contend that the present state of affairs is a manifestly unjust one. It is really protection *against* our own men. If the General Medical Council insists that dentists before registration shall have passed tests which besides proving adequate manipulative dexterity also requires evidence of a good general education—such in fact as anyone who aspires to be called a man of culture must have acquired, it is absurd to register persons who whether Englishmen or aliens have not satisfied equivalent tests. If over here our students cannot acquire a competent knowledge of their profession in less than four or even five years, subsequent to those occupied in obtaining general knowledge, it is ludicrous to suppose that they can so obtain it by the simple process of going across the Atlantic Ocean. Of course, it may be said that the teaching in the American colleges is far superior to that which can be obtained here. But is it? We are not unfamiliar with the advertising "American Dentist" who holds an American degree, and we do not find in him a recommendation of the teaching his advertisements vaunt. He is as different from his educated fellow countryman as the blacksmith of our whilom dentistry is from our dentist of to-day. In America we find the best men lamenting the shortness of the curriculum even in the best colleges, as to the inferior colleges from which, by the way, our refugees hold their license as often as not, none can contend that they or their alumni are ornaments to the profession. We have little inclination to trespass upon other people's business, and if the holders of the dental doctorate would practice upon our indigenous diploma—the L.D.S. which no doubt would prove an easy qualification for them to obtain, no one would take the slightest exception to them. Indeed, not a few well-known dentists have followed this course, thus upholding by their example their belief in the principle involved. The cry one hears and has heard echoing through the medical welkin for the past few years, that English medical students want an easily acquired doctorate might be hushed were the said students content to do what some dentists have done, viz:—obtain some inferior foreign doctorate, and while practicing upon a minimal English diploma, flaunt themselves as "doctors" upon the strength of their foreign diploma. Such a practice would be held quite unworthy of a medical man, and anyone attempting it would not only be tabooed by his professional brethren but would be running so dangerously near the wind of illegality, that the medical defence societies would probably prosecute him. It is suggested in our contemporary, that similar steps should be taken up against the mushroom dental doctors whose names are not on the Dental Register. Penal clauses are difficult things to manipulate, but it is pretty clear that the evil against which we have directed our remarks is a growing one, and must be dealt with sooner or later, only the longer the evil day of reckoning is postponed the more difficult will the matter become. It is manifestly a very invidious task to allot to the British Dental Association to be public prosecutor, for the general public are sure to listen to whispers which interested persons are bound to utter to the effect that the B.D.A. are not so altruistic as might appear, and are in fact monopolists trying to established a corner in dentistry. We have already had a sensational blare from a sensationally disposed individual, and probably it would prove no unpleasant task for persons of his astuteness to take up the cudgel on behalf of the oppressed foreign D.D.S.! If the State imposes stringent regulations upon its own subjects who practice a State-regulated calling, it is, we take it, equitably bound to protect the public against impostors of extraneous origin, whether their imposition consists in blinking the laws of the country in which they have squatted or in arrogating a title which is not only not recognised, but actually conveys a false impression to the mind of the average layman. To our minds it was an unfortunate circumstance that any doctorate of dentistry was allowed a place on our Register, and we trust one day such an anomaly may be removed. Were such a desirable consummation achieved we feel sure that Americans who are practising over here would be quite as pleased as would Englishmen who have nothing to lose by fair competition, and much to gain by equitable legislation.

FAITH HEALING IN DENTISTRY.—According to the *Ohio Dental Journal*, one of the most remarkable cases on record of dependence in faith cure is that of a Dexter woman, who is reported as having become so infatuated with the Christian Scientist theory that she laid away on the shelf her false teeth that she had worn several years, declaring that she had faith that natural teeth would grow again. She has waited patiently for this result for six months, but for some inexplicable reason the new teeth yet delay their coming.

Selections.

MECHANICAL TREATMENT OF CONGENITAL FISSURE OF THE PALATE.

By Grant Molyneaux, D.D.S., Cincinnati, Ohio.

In presenting this paper on the mechanical treatment of cleft palate, I have deemed it advisable to precede the description of the appliance with a reference to some conditions that exist during vocalization, with a normal and abnormal palate ; in order to better understand the principle upon which the construction of an appliance for the treatment of abnormal palate is based.

For perfect and pure enunciation it is necessary, other things being equal, that the cavity of the nose be perfectly separated from oral and pharyngeal cavities except for the sounding of the two consonants M and N.

This separation under normal conditions is effected by the soft palate acting in conjunction with the superior constrictor muscle of the pharynx.

In congenital fissure of the palate, which is the only lesion that can properly be called cleft palate, we have a permanent communication between the oral, pharyngeal, and nasal cavities, and consequently impaired speech, the degree of which depends largely upon the character and extent of the fissure.

The treatment consists of substitution in line of the fissure, of various formed appliances, by which we can utilise such muscular action as is available to close and open the posterior nares during vocalization.

As there is a diversity of opinion as to the principle upon which this closure is effected, it will be necessary to consider the anatomy of these cavities, and muscular action, before we can determine upon a definite basis of treatment.

In the normal palate we have a soft elastic curtain, projecting from the hard palate, composed of, and actuated by, the levator and tensor palati muscles, the palato-pharyngei, palato-glossi, and azygos uvulæ muscles.

When it is necessary to vocalize any letter except M or N, the soft palate is extended posteriorly to meet the posterior wall of the pharynx, which is, by the contraction of the superior constrictor muscle of the pharynx, moved forward.

This extension of the soft palate posteriorly is caused entirely by the action of the palato-pharyngei muscles, and as the soft palate strikes the wall of the pharynx its lower edge is turned forward, thereby presenting a convex nasal surface to the pharyngeal wall.

This simultaneous action of the palato-pharyngei acting on the soft palate, and the contraction of the superior constrictor of the pharynx, closes the posterior nares as in swallowing.

Now, when the expired air is thrown into vibration and a tone produced, the tensor and levator palati muscles are called into use, their function being to straighten and make tense the palate by pulling against each other laterally ; this tension being possible only when the palate is intact, and drawn backward by the palato-pharyngei muscles.

This tense palate, which might be likened to a drum-head, is now capable of entering into a sympathetic vibration and adds quality to the tone produced.

Beside the tension and straightening of the palate, the only other function of these muscles, the levator and tensor palati, is to, dilate the eustachian tube, and in no wise can they by an elevation close, or cause to be closed, the posterior nares.

By a closure of the posterior nares and tension of the palate the mouth is formed into a resonating chamber for all sounds save M and N, and is capable of alterations in length, breadth, and depth, to afford a suitable resonance for each tone.

For illustration :

A as in ah, oo as in boot—the larynx descends and the lips are projected, lengthening the resonating cavity to the utmost, and is estimated at about four inches ; I as in it—the larynx is raised, the lips drawn tightly over the teeth, and the cavity is shortened to its shortest diameter, about two and three-fourth inches.*

"The enunciation of the vowels is dependent upon an alteration in the size of the resonating cavity, which gives a definite resonance at all times for the same vowel sound."*

The position of the "lips," "tongue," and "larynx," determines the size of the resonating cavity, and while these are constantly changing position, the superior constrictor of the pharynx maintains nearly a uniform contraction ; the purpose of which is to assist in closing the superior nares.

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* Helmholtz.

Another point worthy of notice is that the vowel sounds can be distinctly enunciated without a perfect closure of the posterior nares, though for purity of sound it is better that it should be closed.

When there is fissure of the palate we have a condition widely different from those just stated. The division in the median line of the soft palate establishes a permanent communication between the nose, the mouth, and pharynx, making articulate speech impossible, while the tone of the voice is flat and exceedingly disagreeable.

The tensor and levator palati muscles have lost their functions, and the palate can be made neither tense nor straight. On the contrary, by virtue of the palato-pharyngei, which are fully developed, the palate is pulled downward and at the same time is drawn backward, and the termini of the uvulæ brought nearer each other so as to touch at times.

The superior constrictor of the pharynx is also as fully developed as normally, and in every effort to swallow, or enunciate, it exhibits the same uniform contraction as with the normal palate.

Dr. Wm. Süersen, Sr., of Berlin, was the first to call attention to the action of this muscle, in connection with treatment of cleft palate, and based the construction of his appliance upon it.

When you consider how impossible it is to use any other muscle to effect a mechanical closure of the naso-pharyngeal opening, it will be seen that all appliances, no matter of what form or composition, if successful, depend upon the action of the superior constrictor of the pharynx.

Dr. Süersen deserves the credit of bringing to notice the possibilities in treatment of cleft palate, when the appliance was so constructed as to obtain the full benefit of the natural action of this superior constrictor muscle.

The clinical features of cleft palate are by no means uniform.

Clefts vary from a simple split in the soft palate, to various extents in the hard palate, and sometimes pass entirely through the soft and hard palate, with complete loss of the intermaxillary bone, and the four incisor teeth.

They are also of various widths, the narrowest being about one-fourth of an inch between the approximating edges of the extremity of the soft palate, and the largest about one and one-fourth inches wide.

The pharynx also varies in size, ranging from three-fourths of an inch to an inch and three-fourths in width, and is frequently larger on one side of the medium line.

The distance between the opposing pillars of the fauces, or opposite the tonsils, varies in different individuals ; as also does the distance between the terminus of the soft palate, and the posterior pharyngeal wall.

As regards their ability to speak intelligibly, we find that patients exhibit the greatest difference, this depending upon conditions just observed and the intelligence and pride of the patient.

The favourable class : patients fairly intelligent, narrow fissure extending only through the soft, or partly through the hard palate, narrow between the tonsils, and narrow pharynx, and a long soft palate.

The unfavourable : the unintelligent, and who lack pride, with extensive fissure, wide at the tonsillar region, wide pharynx, deformed lip, and a short, soft palate.

Patients of the favourable class, by a well-trained tongue will acquire many articulate sounds, though the voice will show the lack of resonance.

In the unfavourable class, a and e, m and n, are the only articulate sounds.

There is no uniformity in the speaking ability of different patients, but the average case will sound the vowels so that they can be understood, while the consonants will assume the vowel sound with which they are associated.

For illustration : B P C D G T V and Z will sound as E long ; J K and H as A in hate, L F and S as E in net ; and R sounds as ah.

But if these letters are used before or after the long or short sounds of the vowel, they will assume the character of the vowel tone.

It can now be observed that during ordinary conversation the quality of the voice depends upon the proper resonance to the vowel tone, while articulation is the result of a constant opening and closing of three valves.

These valves are the labial, formed by opening and closing the lips as in B and P ; the lingual, formed by the tongue against the teeth, as in D and T ; and the naso-pharyngeal, which closes for all sounds save M and N.

In mechanical treatment of cleft palate, it is necessary to establish an artificial valve that can close the opening into the nose at will.

This can only be accomplished speedily, definitely, and for all classes of cases, by constructing an appliance that will fill the fissure in the palate, at the same time projecting above and beyond the soft palate into the pharynx, and of such dimensions that the natural contraction of the superior constrictor of the pharynx will meet the appliance and form a joint with it.

With this accomplished, we turn our attention to the training of the patient, which should be of a rational character, calculated to develop melody and articulation at the same time, and as quickly as possible.

The vowel sounds are the musical tones of the voice, and as they require no trained use of the tongue or lips, and can be uttered distinctly with some air passing the nasal cavity, they become the best sounds with which to begin training.

The practice of these tones should be associated with the proper tone of some musical instrument, preferably the piano.

To this end I have adopted a course of training based upon the theory of Dr. Helmholtz. He has found that the cavity of the mouth gives a definite resonance for all sounds, and this independent of age or sex.

"The same resonance being found in man as in women or children."

After obtaining the scale of resonances, I have reduced them to the compass of vocalization, and, with the letters arranged to the proper notes and variously transposed, turn the patient over to a music teacher.

The pupil of music now takes various exercises with the vocal tones, having them arranged in every conceivable manner, but always giving each vowel its definite tone.

The second exercise consists of the vowels, and the liquids L M N and R, because these rank next to the vowels as regards the difficulty of pronunciation.

Following these are the palatals K H G Y, always giving the aspirate first, the subvocal last.

Next are the labials ; aspirates first P F Wh—B V W last.

The linguo-dentals form the last series and are the most difficult tones to acquire on account of the cumbersome and unwieldy tongue. These are

Aspirates	Subvocal
T	D
Th	th
ch	J
S	Z
sh	zh

The reason for giving the aspirates first, is, that they are only emissions of breath articulated and can be produced while the patient holds the superior constrictor muscle contracted on the appliance.

This voluntary control of the superior constictor muscle soon becomes involuntary and the subvocal tone forms itself.

If the order is reversed it requires much longer to arrive at the same result.

By pursuing a method similar to the above our patient improves the quality of the voice and at the same time acquires a training of the tongue and lips.

If, on the other hand, the patient begins with elocutionary training, valuable time is lost, owing to his inability to use a cumbersome and overgrown tongue, as this organ must be dressed down to a working condition before any real progress can be made.

By the confusion of the tones of the piano with the voice, the imperfect articulation is not so noticeable, and the patient's mind is diverted from the real object, that of trying to utter some definite sound ; and a difficult task is made easier and progress more rapid and encouraging.

After a month or two of musical training, the teacher of elocution will be of great service.

The training now should follow the same line as that prescribed in the musical course, vowel sounds followed by short words formed of the vowel letters, and the consonants L M N R K G H Y, taking up the other letters as rapidly as the patient can acquire them.

The most difficult sound for a cleft palate to acquire are those words ending st, dst and sts.

I have obtained a verse with these sounds from Prof. Pinkley, which is an excellent exercise, and is as follows :

" Amidst the mists and coldest frosts "
" With stoutest wrists and loudest boasts, "
" He thrusts his fists against the posts "
" And still insists he sees the ghosts."

This is a difficult task for many persons with a normal palate, and when it can be spoken distinctly with cleft palate, everything in the way of conversation is possible.

The condition of harelip, which is usually associated with cleft palate, also plays an important part in the training of the patient. If this is united late in life the lip is sometimes so shortened that it is difficult to bring it in contact with the lower as in pronouncing the labials ; these letters then become more difficult than the linguodentals.

This method of training, musical first, and elocutionary second, to which I have but briefly referred, is one of the important features of the treatment of cleft palate ; and when followed up carefully, is productive of the most immediate and satisfactory results, provided the appliance is so constructed as to meet the requirements.

The principle requirements are, stopping up the fissure in the palate, and the pharyngeal cavity, except the space left by the contraction of the superior constrictor muscle of the pharynx.

Secondly,—that the appliance must extend sufficiently low in the pharyngeal cavity, that the dorsum of the tongue can pass firmly against it in swallowing, or as in sounding K.

This can only be accomplished by measuring accurately the size and form of the oral, nasal, and pharyngeal cavities, and their relation to each other ; how to do this, I will explain later on.

For convenience I have divided the appliance into three parts : the pharyngeal portion, the palatine portion, and the nasal portion. Dr. Kingsley says : " Simplicity has gone one step further to remove the pharyngeal portion," disposing of the most essential characteristic.

That portion of the appliance (the obturator) anterior to the pharyngeal portion, is only to stop up the fissure of the palate, separating the mouth from the nose ; while the pharyngeal part is for the purpose of separating the posterior nose from the pharynx, and is accomplished by the contraction of the superior constrictor muscle meeting the edge of this pharyngeal part, and not only by the action of the muscles of the palate.

It is a strange fact that while so much is claimed for this pharyngeal portion, none of our writers give us any idea of how to obtain its proper size and shape.

We are told how by most intricate processes to get an impression of the floor of the nares, a part that is of no service with any form of appliance.

Dr. Süersen is the only person who mentions the necessity of taking an impression of the pharyngeal cavity. His method was to vulcanize an ordinary plate and upon a bar projecting from a plate into the pharynx, build gutta-percha until he had filled the cavity.

This operation required about two weeks, at various sittings, to obtain the marking of the pharyngeal cavity.

When the cavity was so full that M and N could not be sounded he trimmed the gutta-percha from the posterior until these letters were possible. This gutta-percha bulb was then duplicated with vulcanite, making the plate an obturator in one solid piece.

After deciding that the superior constrictor of the pharynx was the only muscle that could be utilized in conjunction with an appliance to close the posterior nares, I determined to note the action of this muscle in speaking.

After a series of experiments on normal and abnormal palates, I found that the contraction of this muscle was nearly uniform in the pronunciation of the various letters.

The point now was to measure this contraction and its relation to the fissure.

Just back and below the eustachian tube is an enlargement, or bean-shaped elevation.

Underneath this elevation is a fissure, sometimes quite deep, which permits the air to enter the nasal cavity at the side of an appliance, such as Kingsley's, and prevents its successful working.

Dr. Süersen has stated that it is always best, to insure uniform results, to extend the appliance over this soft elevation.

The impression, which is to be an accurate guide to the construction of an appliance, should represent these elevations at the eustachian tube above with an imprint of the dorsum of the tongue below, and the size of the pharyngeal cavity during the contraction of the superior constrictor of the pharynx ; and these in exact relation to the fissure in the palate and the palatine surfaces of the teeth.

My first operations according to this method were made with flexible rubber.

The wearing of such extensive appliances of flexible rubber seemed to excite so many disagreeable symptoms such as redness, soreness, and excessive mucous secretions, that I was compelled to abandon its use, substituting hard rubber.

With the use of hard rubber these symptoms disappear, and from the fact that there is no soreness nor nausea, and that the mucus can be removed by the usual method, and that enunciation of all letters is an immediate possibility, I feel convinced of the correctness of the theory.

DESCRIPTION OF APPLIANCE.

The appliance with which I have been most successful is a modification of the "Süersen."

These modifications do not in any way detract from the value of the original "Süersen," but have been added to simplify its construction and at the same time get rid of many disagreeable features that it possessed.

The body of the impression tray required for taking the pharyngeal impression is of modelling compound and follows the outline of the palate, extending into the fissure as far as the terminus of the soft palate, but touches no part of the mouth except the cutting edges of the teeth.

This enables me to place the tray in the mouth as many times as I desire while taking the pharyngeal impression, with assurance of always having it in the same position.

The pharyngeal impression was a difficult matter until I hit upon the wire.

This is bent to the general outline of the pharynx and is about one-fourth inch from the posterior and lateral walls.

It extends low enough to touch the tongue in swallowing, and is twisted and fastened in the modelling compound above and behind the soft palate.

By the spring (gold) 5 the obturator is allowed a compensatory motion, but is quickly thrown into position when the muscles are relaxed.

The lug prevents the obturator from being displaced while in the mouth.

The staple receives a gold bar from palatine surface, which holds the obturator on the proper plane.

These obturators are not made hollow, but in the form of a thin shell with the upper part removed. The reason for this is that if the appliance has a horizontal nasal surface, or convex, the mucus collects upon the appliance, and can only be removed by taking it from the mouth.

If left open and the edges turned slightly toward the median line, the mucus is confined to the narrow space between the appliance and living tissue, and can be removed by the ordinary methods.

By making the appliance detachable every part can be kept clean easily, and repairs, if necessary, can be easily effected.—*The Dental Review.*

PRIMARY DENTITION IN ITS RELATION TO RICKETS.

By George Carpenter, M.D.Lond., M.R.C.P.,
Physician to the Out-patients, Evelina Hospital for Children,
AND
R. Denison Pedley, L.D.S., F.R.C.S.Edin.
Dental Surgeon to the Evelina Hospital for Sick Children.

There is a widespread belief among medical men that the temporary teeth are materially affected in children who are rickety, and as the result of this disorder. In support of this contention extracts from some of the text-books dealing with this disease are given. Thus, one writer says: "Dentition is late and irregular. . . . The teeth themselves are imperfectly formed, their enamel is defective; in a year or two they turn black and break off or fall out."* Another writes: "Dentition is much delayed in rickets, . . . the enamel of rachitic teeth is bad, rocky, or pitted in its disposition, the teeth are notched or have horizontal ridges, and break away down to the gum, where they appear as black, jagged stumps. These conditions are not peculiar to rickets."† Another remarks: "Dentition is much delayed, and the teeth when cut are deficient in dental enamel, so that they decay rapidly."‡ Another says: "The teeth are late in appearing; the teeth, moreover, are specially apt to decay and become loose."§ Another observes: "The teeth appear very late, . . . while they also rapidly decay or fall out, being deficient in enamel."|| Others again state that modifications of dentition vary according to the

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* Fagge, third edition. vol. ii., p. 736-7.

† Goodhart, fourth edition, p. 646.

‡ Quain's "Dictionary of Medicine," article Rickets (Eustace Smith), p. 1,373.

§ Bristowe, seventh edition, p. 930.

|| Roberts, seventh edition, p. 285.

period at which the active phase of rickets becomes manifest. If it be early, there are three ways in which the modifications may occur: 1. The teeth are late in their eruption. 2. The teeth are cut across —that is, they appear in wrong order. 3. They soon become carious, and are often shed early.* In our practice the correctness of these views, in their entirety, has for some time been held in doubt, and with the object of bringing them to the test we have made more careful and extended observations on this subject. For this purpose we have examined the mouths of some 500 children with obvious rickets, and find, as we anticipated, the results are not confirmatory of the prevalent ideas on this subject. Briefly tabulated, these results were as follows: *A.* In the vast majority of patients the teeth are perfect in structure. There is no deficiency of enamel. The teeth do not become loose and rapidly fall out. There is no special proneness to decay. *B.* In those rare cases where the teeth have been found defective a history of inherited syphilis has been obtained. *C.* Dentition is undoubtedly delayed.

The result we have obtained under the heading *C* is then quite in accord with the writers we have quoted, as also with the prevalent opinion, whilst widely differing from them in other respects. Bland Sutton has made the suggestion that the delay is caused by "abnormal thickness of the follicles."† By the end of the seventeenth week of fœtal life the dentine is in process of calcification, and about the same time a process of enamel commences in the enamel organ. From this time forward the process is a continuous one, so that at birth parts of the crown of the teeth are fully formed, and the course is complete, as regards the crowns, between the third or fourth month after birth. It is still, then, a doubtful point whether the enamel has received its full impregnation of salts. Of late years it has been recognised by various observers that rickets may commence *in utero*, and in such instances as these some modifications in structure of the upper parts of the crowns of the teeth might be looked for, as is the case in congenital syphilis. Again, the presence of this disorder at birth, soon after, and up to the third or fourth month, should, on an assumption, bring about some defect of the lower portions of the crowns of the teeth (*i.e.*, near the neck). Following Kassowitz, the earliest indication of rickets are either trifling beading of the costo-chrondral junctions, or cranio-tabes, or a combination of these. He considers that at least 80 per cent. of children in Vienna under three years of age are rickety. On the question of some trifling beading of the ribs amongst the children of the London poor, we should be prepared to go much further than he does, and say that in a very large out-patient experience we have never yet failed to make out some very slight bossing in this situation in the youngest infants ; and that, if this is to be taken as sufficient evidence of rickets, then the disease is nearly ever present in the out-patient room to some extent. A very large number of children must, therefore, be slightly rachitic during the period of the formation of the enamel of the lower half of the crowns of the teeth—*i.e.*, the cervical part.

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* Keating's "Encyclopædia," Diseases of Children, article Rickets; Barlow and Berry, vol. ii., p. 226.

† *Odontological Society's Transactions*, 1889.

On the question of cranio-tabes however, we hold somewhat different views, and consider that congenital syphilis is largely responsible for this condition of affairs.* Moreover, in comparison with the beads on the ribs, it is of infrequent occurrence. Given, then, this beading of the ribs, to however slight an extent present, and seeing also how prevalent this condition is in the out-patient, it would have been expected, if rickets is such a potent factor as the text-books state, that some dental alteration in the shape of enamel scarring would have been detected in a considerable proportion of these cases, yet the contrary has been our experience. We have over and over again watched the teeth-cutting in obviously rickety children—children who have been attending as out-patients for weeks—yet our observations have not been rewarded by the eruption of pitted and defective enamel : on the contrary, it has appeared to be quite perfect.

It must not be inferred that because a history of syphilis has been observed we consider such teeth syphilitic. Whilst not holding with Parrot that rickets is a syphilitic manifestation, yet in our experience, as doubtless in that of many others, the syphilitic cachexia is when present a very powerful agent in the production of rickets. In a large number of rickety children a syphilitic history can be obtained if inquired for,† and the observer is not infrequently startled by the appearance in some such cases of a slight syphilitic rash on the buttocks, and condylomata, a specific ulcer in the mouth, eye trouble, or what not, in a child who, for all the signs that were present at the time of the first examination, would otherwise have passed as rickety merely. These signs showed that the disease was smouldering on, and that the syphilitic cachexia was underlying the rickety trouble. On this account, therefore, we cannot attach that importance to the heading *B* which we might otherwise have done. What we do say, however, is that it is not proven that rickets is responsible for all the dental troubles that have been laid to its charge ; that the association of rickets with carious teeth as between cause and effect is merely an assumption ; and that caries does not take place in any case in rickety children to anything like the extent the text-books would lead us to infer. What is wanted is some more extended and definite observations on this interesting point, and not statements which go the round of the various medical books in somewhat different dress, quite unchallenged and accepted as truisms.—*The Lancet.*

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* "Cranio-tabes in Young Children. A Clinical Inquiry into its Origin. Illustrated by 100 Cases. By George Carpenter, M.D. (St. Thomas's Hospital Reports, vol. xix., pp. 234 *et seq.*)

† St. Thomas's Hospital Reports. vol. xix. p. 341.

PARTIAL SUPPURATING PULPITIS—ORIGIN OF CERTAIN ALVEOLAR ABSCESSES IN LIVING TEETH.*

By Arthur C. Hugenschmidt, M.D., D.D.S., Paris.

Chronic localized suppurating pulpitis, that is, a *suppurating* inflammatory process restricted to a portion only of the pulp, such as we commonly observe in teeth in which the pulp has been exposed for a long time, protected only by alimentary particles packed in a carious cavity, can also exist in a tooth in which no communication has ever existed, artificially by instruments or otherwise by natural pathological processes, between the external surface of the tooth or crown and the pulp-cavity. I refer, it must be well understood, to a *localized suppurating* inflammation, and to no other localized non-suppurating inflammatory process which is found in living pulps. In such non-penetrating carious teeth, where such a pulp-lesion exists, provided the conditions I shall hereafter describe are present, the pathological state will manifest itself under the form of a chronic alveolar abscess opposite the end of a single-rooted tooth while the pulp of that same tooth is still alive, as it answers to all the principal physiological reactions.

In adult teeth we find such conditions rarely, yet I am convinced that every careful practitioner has certainly met with teeth presenting a fistulous opening opposite the apex of a certain tooth which the operator considered as dead; yet when he attempted to reach the pulp-cavity, to his amazement he finds a highly-developed sensitive dentine; if the neighbouring teeth are tested in the same way, they also are found alive, and yet the first tooth is the real seat of the abscess.

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* Read before the New York Odontological Society, June 21st, 1892.

While this condition is a rare one in the adult, *per contra* we find it much more frequent in the child, which is explainable, anatomically, by the fact that the apical foramen is very large, as a result of physiological radicular absorption, and I think that a large foramen in the adult, as well as in the child, is a necessity to enable the inflammatory products to make their exit from the pulp-cavity without injuring or destroying the vitality of the dental pulp.

The clinical facts which I have observed on several patients have been as follows:

The patient will present himself suffering from a chronic alveolar abscess, an ordinary gum-boil, which might have existed for months, and which is situated at a point on the gum opposite the apex of the root or roots of a tooth. The patient will complain that this abscess opens every day, or every two days, that the rupture of the same is preceded by a short period during which the tooth is sore, is annoying, a pressure on the same relieving the annoyance, but as soon as the abscess opens, everything, all physical symptoms disappear.

On clinical examination of the mouth we find a small, typical, alveolar abscess, about the size of a small pea, rolling under the finger, and situated opposite the apex of the root of a tooth. Examining the corresponding tooth, we find it normal, no caries being present, perhaps a small gold filling. On careful examination, however, the tooth opposite which the abscess exists may be slightly darker in colour than the neighbouring teeth, but very little so. Of course, the first step in the treatment of such a case, after having excluded in our diagnosis the alveolar abscess of external origin, due to an infectious alveolar arthritis, will be to reach and open the pulp-cavity in which we expect to find a dead pulp; but as soon as the drill has passed the limits of the enamel and penetrated the dentine the patient will begin to complain, and the more we advance the greater the pain becomes, so that, at a certain moment, the pain being unbearable, we feel convinced of having made a false diagnosis, and the cavity artificially formed will be closed with gutta-percha or some other material.

Turning our attention to the neighbouring teeth, and, *imagination aiding, we think* that the second one nearest to the fistula is also a little darker, so on that tooth the instrument goes, and as soon as the enamel is passed, we find again sensitive dentine ; if the tooth on the other side be opened, also, the same positive results as regards sensibility will be noted.

Now we find ourselves in presence of three sensitive teeth, sensitive not only to the touch, to instruments, but also to extremes of temperature, heat and cold ; teeth which respond to a normal sensibility, to a normal state, and yet one of those organs, somewhere, is the cause of this persistent abscess.

Well, if, following our first impulsion—and a first impulsion is usually the good one—we continue our drilling in the first tooth which attracted our attention until we reach the pulp, we shall fall, as may be expected, on a living pulp, and a lively one, too ; and if we are careful we shall find in the blood, escaping as a result of the instrumental lesion of the pulp-tissues, a small quantity of pus, which certainly comes from the pulp-cavity, and from the pulp in particular. It is in such cases that the pulp can be seen beating synchronously with the heart's action, as in such cases it is larger than usual ; and the foramen apicale being also very large, *a fortiori*, the blood-vessels of the pulp will be more developed, and any other normal physiological act pertaining to the pulp will be magnified.

If, now, this pulp be removed without tearing, which can be done by injecting cocaine in the gums beforehand, so that the patient be very quiet, we shall be able to observe an ulceration of variable sizes —usually a small pin's head,—situated somewhere on the surface of the pulp-organ, usually near the crown, but we have also seen it on the radicular portion. Moreover, and this is an important fact, the apical foramen will be found unusually large, and for this reason, as well as for reasons given above, the bleeding produced by removal of the pulp is a profuse one, as if a comparatively large artery had been opened ; it can be arrested, however, by tamponing the pulp-cavity.

It will be readily understood that this ulcerative process giving rise to suppuration, the pus will travel all along the external portion of the pulp until it reaches the apical foramen, which, being very large, will prevent strangulation of this organ, which otherwise would occur ; from the apical foramen to the outside of the gum the pus will follow exactly the same course as it would in an ordinary alveolar abscess.

In the child, as I indicated above, the phenomenon of radicular absorption increasing much beyond the normal dimension of the foramen apicale, there exists a free communication between the pulp and the peridental tissues ; and any localized pathological lesion of the pulp, if it passes at the period of suppuration, will allows its inflammatory products to pass with greater facility in the surrounding tissues through the apex than through the hard tissues of the tooth, which cannot yield unless there should be a penetrating carious cavity.

In the child, clinically, we observe an alveolar abscess larger than in the adult, attaining usually the size of a hazel-nut, and having for its origin a carious temporary tooth, the caries having not exposed the pulp-cavity. If we take away any dentine, the little patient will protest ; also, if we inject cold or hot water, which is an indication of the existence of a living tooth ; in addition, if we continue our operation, and open the pulp-cavity, we shall find a normally sensitive organ, which will bleed, and at the same time pus will be seen mixed with the blood, which is indicative of a neighbouring suppurating lesion.

Lesions of the pulp have been indicated and carefully studied in a patho-histological point of view by Dr. Arnim Rothmann, of Buda-Pesth, who divided pulp-lesions into : 1. Acute partial pulpitis. 2. Acute purulent partial pulpitis. 3. Acute total pulpitis. 4. Total suppurating chronic pulpitis. According to that author, the first one is due to an inflammatory process which commences under the odontoblastic layer, and only extends to a very limited region. This inflammation is characterized by a cellular infiltration, which is probably due to micro-organisms. The second form is an ulcerous process, which also destroys the odontoblastic layers, and which, according to the duration of the disease, extends more or less deeply into the tissues of the pulp ; if this second form lasts too long it becomes a total acute pulpitis. Finally, total suppurating chronic pulpitis is a chronic process, beginning in the centre of the pulp and extending slowly to the periphery. The diagnosis of these different lesions have been verified, according to the author's statement, by extraction of the involved teeth.

Dr. Rothmann does not mention the existence of a *chronic localized* suppurating pulpitis, and yet I am convinced that such is the lesion observed whenever a pulp has been long exposed and has not died, and also that such was the lesion which I observed in living teeth presenting abscesses, the histories of some of which I sent to the American Dental Association in August, 1890.

This chronic localized suppuration does not offer very characteristic clinical signs, and to establish our diagnosis we must satisfy ourselves with the three following facts: First, the presence of a chronic alveolar abscess, or dental fistula, opposite the apex of the root of the suspected tooth; secondly, a more or less deep discoloration of the crown of the tooth as compared with the neighbouring ones; thirdly, the indication given by the patient that the suspected tooth is the seat of an annoyance, of an obscure pain, when the abscess was forming.

When these three signs are present, and the neighbouring teeth are not devitalized, one must not hesitate to trephine the suspected tooth, notwithstanding the dentinal sensibility which will be encountered, and surely, if the pulp be carefully removed, the origin of all the trouble will be found.

As a conclusion, I think I can state that living teeth in adults, as well as in children, can give rise to an alveolar abscess.

GOLD ADDED TO COPPER ALLOY.

By J. E. Register, D.D.S., Dover, Del.

In chemical reactions the resulting compound is always entirely different in its characteristics from any of its component parts; and this fact has strengthened me in the belief that there is great advantage in adding gold to copper alloy, to strengthen the latter in its resistance to the attacks on it by substances in the mouth,—many supposing these to be either sulphur, forming a soluble sulphate of copper, or acetic acid, forming a soluble acetate of copper. My theory leans more to the latter, as I believe acetic acid is the more readily formed in the mouth, owing to the acetic fermentation of he ingesta lodged in and between the teeth.

Dr. H. C. Register, of Philadelphia, suggested to me this treatment of copper alloy; but as it is yet a theory, I hope every operator reading this article will give it a trial, and if happy results follow, one of the best antiseptic filling materials will be saved to dentistry. I will give my manner of preparing and inserting the alloy. The mercury is first prepared by placing in a small glass vial one ounce of the best redistilled mercury, and to this is added one leaf of No. 4 adhesive or soft gold foil; shake the vial thoroughly for fully five minutes, and at the expiration of this period the gold will be found to be thoroughly dissolved. In this state the mercurialized gold (the name I have given it) can be kept any length of time, and is always ready for use. Then take an ingot of pure copper alloy, the requisite size to fill your cavity, and hold it over an alcohol flame till small beads of mercury cover the entire surface of the ingot. Then place it in a mortar and grind with pestle till of a smooth, soft, pasty mass; place this mass in a chamois skin, winding it up tight, and, with the assistance of heavy flat-nosed plyers, squeeze all the free mercury out. Place this flat dry cake in a mortar and grind with pestle, adding to it enough mercurialized gold to make a soft pasty mass. Take this mass and squeeze one-half of it between the finger and thumb to the consistency of stiff putty; take the other half and wind tight in a chamois skin, and with plyers squeeze very dry. Fill the cavity first with the softer mass, and as the free mercury comes to the surface, add small pieces of the dry, till all the free mercury is taken up, and the filling is solid and firm. Then burnish and instruct the patient not to disturb it in any way for at least from twelve to twenty-four hours. Now, as to whether this gold added will meet with the results desired will take several months to thoroughly test. "In the multitude of council there is wisdom," and with the numerous readers of this journal there may be many who can suggest some way of better manipulation. If so, I, for one, would gladly hear from them; and also hope many will give the suggestion a trial.—*International Dental Journal.*

Journalistic Memorabilia.

A PARAFFINED CEMENT-SLAB.

A piece of American or English tile having its pores filled with melted paraffin makes a very good slab for the mixing of oxyphosphate or other cements. These will not adhere to the paraffined surface as firmly as to a glass or porcelain slab, and after the surface has by use become roughened, it can be made smooth again by re-heating and apply more paraffin.

I know of nothing better for the purpose, unless it be a device suggested by Dr. Le Roy Requa, which consists of a compact pad of writing-paper, which from use gradually grows less by the removal of a sheet at a time.

Another use can be made of the paraffined tile, which, when wet and dipped quickly in melted wax, will form of it thin and smooth sheets for office and laboratory uses. A smooth slab of plaster of Paris is, however, fully as good, if not better.—J. H. Beebee, Rochester, N.Y. (*Dental Cosmos*).

The Editor of *Items* says : " After extraction, hot water to rinse the mouth assists in forming a clot, and thus stopping hemorrhage ; cold water prevents the formation of the clot and increases hemorrhage, And hot water is more agreeable to the patient. In spite of cold water, a clot will generally form, but it will be much weaker, and, therefore, secondary hemorrhage is more likely. The first fresh blood from a wound is much the best as nature's healer, and the less it is interfered with the better. Often there is no call for even hot water, unless the mouth is rinsed with cold water.

" Occasionally antiseptics may assist, but these are not usually as potent as we imagine. The pressure of the patient's finger on the part for a few minutes is generally sufficient to assist nature in filling the cavity with clot till the torn blood-vessels close. If this simple remedy is not sufficient, plug the cavity with cotton. The idea that this must be saturated with acetate of iron is not so important, and sometimes injurious, for the clot it forms is often so tanned that it easily breaks away, causing secondary hemorrhage. If anything is used on the cotton wad, let it be chloride of zinc or nitrate of silver, or the two combined."

Lining Plates with Soft Rubber.

About two years ago a patient came to me, says Dr. Osmun, in the *International Dental Journal*, to have an upper and lower denture fitted. I never saw a more unpromising mouth. It was as flat as flat could be. In the lower jaw there was no ridge whatever. The party had been in the hands of two or three gentlemen who are skilful dentists, and there had been made a number of plates of different kinds,—aluminum plates, electro-deposit plates, and so on ; and they were all beautifully made, and accurately adjusted and occluded, so far as I was able to discover ; but they would not stay in place. I took an upper and a lower impression, and laid them one side. While I was thinking about what I should do in the case, I was walking along the street one day and I saw some boys playing with suckers on the sidewalk, wet pieces of leather attached to a string ; and I said to myself, if I could get a flexible surface to those plates, I believe they would adhere. I wrote a note to Dr. Kingsley and asked him to send me over some pieces of vellum, or soft rubber. This came through a suggestion of Dr. Van Woert. I made a lower plate as we usually do, lining it with soft rubber. The adhesion of the upper plate was very defective ; but the lower one which I made was perfectly firm. I then prepared a new upper plate, and lined it with vellum, with a like good result. The upper one is worn in the mouth till the present day ; the lower one I made over for reasons which I will state further on.

When I packed the plate, I dissolved some ordinary rubber in chloroform ; coated the model, and then placed on the soft rubber. I found that this way left hard places, little particles of rubber vulcanized hard. Then some soft rubber was taken and dissolved, and used to fasten the vellum on the model, and it did much better. I only covered the inside with the soft rubber, leaving a sort of ridge around the outside of the plate to finish. I found that the soft rubber left a little too much hard rubber on the outside, that cut down into the soft tissues. The lower plate was made over, lining the entire under surface. I packed it first with a piece of blotting paper, to get the thickness ; then packed with rubber as we usually do. The finishing was difficult. It was rough, and uncomfortable to be worn. A disk was placed in the dental engine, and revolved rapidly, trimming down the plate until perfectly smooth.

The plate is not as clean as a hard-rubber plate, and it is only in those cases where it is exceedingly difficult to retain a lower plate that I would recommend its use. You must impress on the patient the necessity of keeping the plate clean. And it is not as durable as a hard-rubber plate. But I think we are justified in using such plates in mouths of persons unable to wear anything else. This patient had had no comfort for some years. I have used this style of plate in perhaps half a dozen cases, and every time it has been worn with satisfaction.

In upper dentures you sometimes find you can retain them in this way. Try this method of lining the plate when nothing else will do. Sometimes in partial cases you find the rubber plate will rub the teeth ; and in such cases if you place a little vellum or soft rubber around the teeth on the plate, it will act a spring or sponge and hold it very nicely. There are many ways that will be suggested to you as you use it. The plate has to be made a little thicker when the soft-rubber lining is used, to compensate for loss of strength. I sometimes vulcanize my soft rubber lining with my plate by a second vulcanizing, never carrying the heat above 200 to 300 degrees and vulcanizing longer in proportion.

Mouth Breathing Children.

The dangers to children accustomed to breathing through the mouth instead of the nose have been quite seriously treated of late in papers on the subject by physicians in Germany, France, England, etc., the principal disturbance accompanying the habit being described as inability to fix the attention on any more or less serious subject, and with this impairment of the attention goes feebleness of memory and tendency to headache, while in some cases the organs of sight and hearing are successively affected, conjunctivitis and hardness of hearing being the results. In Germany, some time since, Dr. Max Bresgen placed before the Minister of Public Instruction a request that a regular medical supervision should take place in schools, especially with regard to the state of the upper respiratory organs of the school children. In France also Dr. Raulin has published the same views, laying great stress on the necessity of regular medical inspection, not only of the schools but also of the school children, especially with respect to the state of their nasal respiration. Dr. Guy, of London, also declares that so long as medical school inspectors are wanting, teachers should be impressed with the importance of giving attention to the question of mouth-breathing, especially in children intellectually backward.—*Dental Review.*

Flexible Rubber Plates.

Dr. Stowell writes to the Editor of the *Dental Review* : 'Herewith I give you the result of a little experiment in thin, flexible rubber plates.—Wax up the case in the usual manner. After trying in the mouth to see that it is correct, fasten the outer rim solidly to the cast with wax, then cut out the wax from palatal portion and burnish the lead in its place ; letting it come up well around the teeth. Flask as usual and after washing out the wax and removing the lead apply dry heat to the case to dry the surfaces, then paint with liquid silex ; the heat of the case will soon dry the silex. Make a good large gate at heel for surplus rubber and pack the same as for thick plate, using black rubber for palatal portion. Care must be exercised in cutting away surplus not to split the thin rubber. The polishing can be done with brush and cotton wheels. No scraping or sandpapering necessary. This makes a much pleasanter plate to wear in the mouth, and gives better satisfaction to the wearer."

COLD SOLDERING.

According to Dr. Harper, who writes in the *Western Dental Journal*, "'The flux consists of 1 part of sodium to 50 parts of mercury. This must be carefully protected from the atmosphere in a glass-stoppered bottle. This has the property of amalgamating any metal with which it comes in contact, forming an adhesive amalgam even on cast iron. First amalgamate the surface to be joined by rubbing them lightly with the flux. This is the equivalent of tinning in the ordinary soldering methods. Then take one (or more as the case may be) of the pellets of copper amalgam and warm till the mercury begins to exude at the surface, wipe off the exuded drops with a clean rag, and drop the pellets in a small mortar and rub till smooth, of about the consistency of prepared white lead ; smear this over one of the surfaces to be joined, and apply the other surface to the latter as quickly as possible. The joint sets so firmly in the course of two and a half or three hours that only a hammer or cold chisel (or a degree of heat sufficient to melt ordinary solder) can separate the surface.'"—*National Druggist.*

"I called on the Editor of the *National Druggist*, to get some further information on the above subject. He told me he had cold-soldered a band saw, and to his certain knowledge it had lasted for over a year.

"Mr. Windhorst, a dental student, used the cold soldering process to replace a tooth on a bridge with satisfaction, also soldered the shank of a mouth mirror, which had been broken, and could not be hot soldered without taking the glass out.

"For an even stronger and much quicker setting solder, where expense is no item, take the following to replace the copper and mercury (using the same flux) :

Silver	8 parts.
Tin	10 parts.
Bismuth	1 part.
Platinum	1 part.

"Melt together and cast an ingot. Rasp to filings, or otherwise reduce to small particles. When required for use mix about 3 parts of filings and 1 of mercury in a small mortar till it becomes smooth paste. This sets in about fifteen minutes, and cannot be made workable again by heat; it must be mixed as required.

"The omission of the platinum reduces the strength of the solder, and lengthens the time required to harden by about one hour. The omission of bismuth makes a more granular mass, which is better for filling up crevices, with bismuth it is as smooth and plastic as potter's clay. Joints made by this solder are almost inseparable. It is very valuable in repairing surgical and philosophical instruments, the brazing of delicate springs, and in all cases where the application of heat would be hurtful or destructive."

ADJUSTMENT OF CROWNS.

Writing in the *Dental Cosmos*, Dr. Kirk says—"The following method for the adjustment of Logan and similar classes of crowns I have found extremely satisfactory in cases where there has been much loss of root structure through the action of caries in the pulp canal, resulting in a large funnel-shaped opening with more or less weakened root-walls.

"After preparing the canal by removing the softened structure, filling the apex, and making suitable undercuts or roughness within the canal, the latter is filled flush with its orifice with a good grade of copper amalgam softened to a plastic, buttery condition. The apical end of the tooth-crown pin is sharpened to a point or hatchet edge, as may be most expedient, and placed against the amalgam surface in the root-opening. A suitable point, mounted in the Bonwill mechanical mallet, is held in contact with the dorsal surface of the crown, which is driven to place in close contact with the root by blows repeatedly delivered from the mallet. All excess of copper amalgam is by this means driven out between the surfaces of contact of the crown and root in precisely the same manner as occurs in the use of oxyphosphate. The point used in the mallet for driving the crown to its seat is best improvised from a porte polisher armed with a hickory point, the use of which avoids clipping the porcelain. An excess of copper amalgam should be used, in order to fill all interstices. This method, involving the use of copper amalgam, is advocated only in the class of cases described, and possesses the advantages of giving complete support to the root, great strength of the material employed, and its insolubility. Other amalgams experimented with for this purpose have not been so satisfactory, because of their lack of plasticity and flowing quality which characterizes the copper amalgam when subjected to the rapid, vibratory, percussive force of the mechanical mallet blow, which for this purpose should be considerably increased in intensity beyond that ordinarily used for filling operations"

Under the caption of "DENTAL DOTS," D. V. BEACOCK writes :— "In filling a cavity in the anterior part of a lower molar that is well down under the gum, the bicuspid missing, it is sometimes difficult to keep the rubber down even when a clamp is used. Take a thin piece of metal, German silver or Taggart tin, fit it neatly between the teeth. When the rubber is adjusted, press this firmly down ; it will carry the rubber below the edge of the cavity and hold it there.

A small sized wooden screw, screwed into the root of a tooth, answers well for packing gutta percha or composition around ; when we want to force the gum out of the way, leave it two or three days. The head of the screw serves to hold the material in place ; no danger of it coming out when once set.

"Artificial teeth may serve very well for mastication, yet, as in speech or expression, which depend on colour, size, position, and relative arrangement, may be very defective in other respects. Temperament, complexion, contour, and general cast of countenance should all be considered in the construction of a proper set of artificial teeth, to constitute a successful work of art.

"Cheoplasty was invented by Dr. A. M. Blandy, of Baltimore, in 1854.

"Instead of having your flask screwed, made stationary to the bench, have it so fixed that it can be lifted off and on over the screws, that is, made portable. This can be done by simply filing the heads of the screws. When you put in your flask, both it and the press can be lifted off and set in the boiler or heater, and put on its stand again and screwed down without any handling or using cloths. To keep the flask out of the water while vulcanising, use part of an old mattress spring or coiled wire strong enough to hold the flask above the water.

"There are said to be no less than twelve manufactories of artificial teeth in the United States, which make 10,000,000 of these useful articles per annum.

"Cotton waste holder, to make: Take a deep glass or porcelain box, such as a tooth-powder box. Cut two slits in the top of the metal screw cover, in the form of a cross, one inch or a little more in length; press down the four points into the box; the slits will catch the cotton and pull it off the plyers or excavator. By putting in a piece of sheet lead cemented to the bottom or a little shot to weight it, every dentist may make himself a very handy little receptacle for bits of waste cotton, bibulous paper, etc., without taking off with his fingers. It is always clean, easily made and self-acting.

"In 1859 there were only two kinds of base plates in use—silver for temporary and gold for permanent.

"Copper amalgam is very useful for many things in dentistry, besides filling teeth. It may be used for fastening a tooth or a rubber plate, making a full crown for back molars, making matrices for striking up a gold cusp or articulating surface for a gold crown, strengthening or reinforcing plaster models, cusps or any part of the gums or root of a tooth, or a whole tooth may be readily built up in the impression before running the plaster into it. This is often very useful when it is necessary to fit a gold or platinum band round a tooth or root, as the amalgam tooth is quite hard enough to burnish on, while the plaster tooth is frail and would be broken. The amalgam can all be saved and used over and over again.

"Statistics show that there are more first molars lost than bicuspids. Dentists then as a rule should take out the molar in preference to a bicuspid, except in extreme cases.

"To avoid breaking blocks when vulcanising, grind the tops square and don't let the rubber come over them; in waxing up the case scrape off the wax on a level with the gum, then when the rubber shrinks it will draw over the square ground surface without cracking the thin porcelain."

V. HADERUP, of Copenhagen, says the *Western Dental Journal*, has used ethyl bromide in dental surgery in some 250 cases; average quantity in each case, 12 grammes. In all cases of difficult extraction of teeth or where several were to be extracted, ethyl bromide has been applied until the patient has been snoring, the narcosis, on an average, having lasted ninety seconds in adults, after which most patients have felt well within about five minutes, except a few cases where sickness, vomiting, headache, sleepiness, and weakness have followed. The author has never observed any dangerous complications, and strongly advocates this method of anæsthesia.

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VULCANITE—ITS HISTORY.

By GUY HARPER, L.D.S.

Caoutchouc or india-rubber consists of the dried coagulated juices obtained from trees belonging chiefly to the natural orders of *Euphorbiaceæ*, *Moraceæ*, *Artocarpaceæ* and *Apocynaceæ*. The milky juice furnishing this material is found in the middle layer of the bark contained in a network of minute tubes, known botanically as the lactiferous vessels. But it must be borne in mind that although all trees of these genera produce caoutchouc, the quantity produced by the various species of the genera is very different. The milky juice obtained from this source contains all the properties of a vegetable emulsion ; the caoutchouc being suspended therein in the form of minute transparent globules, and like other emulsions is very easily coagulated, salt and alum being the re-agents usually employed for this purpose, the latter being undoubtedly the best as far as the resultant rubber is concerned. The hygroscopic properties of the caoutchouc obtained by coagulation with sodium chloride considerably interfere with the uses for which rubber is usually employed. In the manufacture of the best qualities of rubber the juice is first very carefully strained, then evaporated at a moderate temperature.

Caoutchouc differs from other vegetable products of similar origin in that it possesses considerable elasticity, and is insoluble in water or alcohol, alkalies and acids, with the exception of concentrated solution of nitric and sulphuric acids. The milky juice referred to above contains a small quantity of a viscid oxidized resinous matter, soluble in alcohol, and in the same way that different species of the same genus produce different quantities of rubber, so the quantity of this resinous matter is found to differ in the various sources from which the juice is obtained, that from Para being undoubtedly the best in this respect, and consequently the more valuable.

It was during the second voyage of Columbus, some five hundred years ago, that india-rubber was first noticed. Some of his crew, and among them Herrera, seeing the inhabitants of the island of Hayti playing a game with a ball which was so different to any they had seen before, made enquiries among the natives, who told them that it was made from the juice of a tree growing on the island.

Torquemada seems, however, to have been the first to mention by name the tree yielding this product. In a book published at Madrid, A.D., 1615, he describes the tree as being very tall, the leaves round and of an ashy colour, and says that a white milky fluid, thick and gummy was obtained from it. The process of manufacture was curious ; the fluid was collected in calabashes and allowed to settle, the thick substance thus obtained being softened in hot water and then smeared over the bodies of the natives and rubbed off when sufficiently dry. Further we read in the same book that an oil was extracted by heat from the rubber so obtained, of great use in removing tightness of the chest ; also, that this oil mixed with cocoa and drunk was a most useful remedy for stopping hæmorrhage, and even that at this early age the Spaniards used this material as a means of rendering their clothes waterproof; unfortunately, however, no mention is made of the method employed. In spite of the great use it undoubtedly was, strange to say little or no notice was taken of it in the old world, in fact, it was not till many years afterwards that the general use of india-rubber obtained here at all.

The credit of the first accurate information concerning any of the caoutchouc-bearing trees is due to the French government, or I should say to their emissary, La Condamini, who was sent to Quito in the year 1735 to measure an arc of the meridian, though his description does not seem to tally with that of Torquemada, particularly as regards the height of the trees. Again in 1761 the researches of M. Fresnau, an engineer residing in Guiana, were published by the French Academy, and in 1755 M. Amblet described the species yielding caoutchouc in French Guiana. But, for all this, we find that india-rubber remained practically unknown, except as a curiosity, for Dr. Priestly in the preface to his work draws special attention to it as a novelty for removing pencil marks, and says that it was sold in squares of half a cubic inch at three shillings a block. The india-rubber industry proper did not begin till the nineteenth century, and the strides it has made since then can be best realized by a comparison of the following figures :—

In 1830 the amount imported was 464 cwt.
,, 1879 ,, ,, ,, 150,601 ,,

In the latter year it was computed that there were 150 manufactories in Europe and America employing rubber, coming chiefly from Para, Cearca, and Madagasgar, the former producing by far the best qualities of manufactured rubber.

Caoutchouc is composed of carbon and hydrogen alone, the relative proportion according to an analysis made by Faraday being : carbon, 87·5 ; hydrogen, 12·5.

The action of cold and heat on rubber is very interesting. When exposed to a temperature of 6° C., it loses all its elasticity and becomes rigid, although its normal condition may be restored by the application of heat to the amount of 30° to 40° C., or by stretching to twice its normal length, a reaction probably effected by the heat arising from tension. The action of heat is more complex. The primary effect of heat on india-rubber at a normal temperature, say 15° C., is to increase its flexibility and elasticity, but as the heat is increased the elasticity decreases and the rubber becomes softer, until 120° C. is reached when its elasticity is altogether lost, and it becomes considerably softened ; but if the rubber is of good quality, although exposed to even this high temperature, it will resume its former condition under a moderate degree of cold. When, however, the temperature is increased, this no longer occurs : at 150° C. it becomes viscous, and at 200° C. is molten, forming a thick liquid, possessing the composition of ordinary caoutchouc, but having no tendency to resume its normal condition under any degree of cold. Caoutchouc shows a distinct tendency to oxidize on exposure to air, whether damp or dry, and exhibits only a very moderate reaction under the influence of chlorine, bromine or iodine.

Hardened or vulcanized india-rubber when pure is nearly white, having a specific gravity of ·915, in composition it is porous and cellular, capable of absorbing from 10 to 25 per cent. by weight of water when soaked in it for a long period. It is soluble in benzol, and its homologues, carbon disulphide, ether, chloroform and volatile oils in various quantities. In the crude state, caoutchouc contains various impurities, which are due to either natural causes or to impurities which find their way into the receptacles during the gathering process. These impurities are removed in the manufacture by first softening in hot water, to enable the rubber to be pressed into lumps; these lumps are then cut in slices by a sharp knife and the slices forced between grooved rollers, supplied with plenty of water to wash out the impurities crushed by the rollers; the excess of water is afterwards removed by hanging in a warm room.

The rubber is now ready to be incorporated with sulphur, which is easily effected by laying the cut sheets in powdered sulphur for some time at 110° C. The whole is then forced into square moulds and cut into thin slices for future manufacture, which will include vulcanization as caoutchouc is of little use unless vulcanized in some form or other. After vulcanization rubber is no longer affected by heat, a temperature of 160° C. having little effect on it. The vulcanization is effected by the chemical combination of the sulphur and rubber, which is brought about in one of two ways:—

1. Subjecting the sulphured cut sheets to a moist heat of 140° C. for one hour.
2. Exposing the caoutchouc to the action of chloride of sulphur, vulcanization taking place without the action of heat, but it is necessary to thoroughly wash the vulcanite afterwards with a warm alkaline solution to remove the hydrochloric acid formed during the process.

With regard to the former. Cut sheet rubber will absorb about one-tenth of its weight of sulphur when immersed in a bath of that material at 120° C. while still retaining its general properties; when however the mixture, so far mechanical, is subjected to a further 20° C. of heat, combination then takes place. The length of time taken in vulcanization, of course, depends greatly on the nature of the finished article and the amount of sulphur incorporated with the rubber. The heat necessary to bring about this combination is generally obtained by high pressure steam.

Vulcanite pure is more or less white, and as other colours than this are required in the many uses to which vulcanite is put, various pigments have to be incorporated into the rubber, namely vermilion, oxide of chromium, ultramarine, orpiment, antimony, lamp black and oxide of zinc. The pigmentation of the rubber is effected either by mastication or by steam rollers heated internally by steam, which work in opposite directions at unequal speeds. Of late years the form of manufacture has slightly changed, the sulphur bath being no longer in general use, the rollers taking their place. Sulphur to the extent of about one-tenth by weight is ground into the rubber by this means, the pigmentation following, and lastly vulcanization in the ordinary form.

POINTS IN EXTRACTION.*

By R. W. Gillett.

Mr. President and Gentlemen,

Before commencing my paper I think a few introductory remarks would not be out of place, so that we can have a clear understanding as to the scope of the paper. The heading of my paper may be rather misleading to some of you, as it was decided upon before I had really given the subject my whole attention. I shall not attempt to describe to you the different methods of extracting the various teeth, as I believe that they may only be learned by constant practice in the extracting room. I shall only make mention of a few general hints. With regard to the instruments little can said dogmatically, as every one will probably have a different opinion.

Before extracting a tooth great care is often necessary in finding out the cause of trouble, which may generally be found under the following headings :—Inflammation of the pulp, inflammation of the periosteum, and neuralgia. The last I shall omit, being of itself too exhaustive to be dealt with here.

Inflammation of the pulp may be divided into hyperæmia, acute inflammation, and chronic inflammation. Acute inflammation is more severe at the commencement than chronic, and usually terminates in death of the pulp by suppuration in a day or two. Chronic inflammation is less severe at first, and only attacks the portion of the pulp round the exposure, it may last for months or even years without destroying the pulp, and may terminate in polypus of the pulp, suppuration, or some kind of degeneration. Symptoms of acute inflammation as distinguished from chronic are, pain of a throbbing character, which comes on worse at night when the patient is in a recumbent position or gets warm in bed. The symptoms of chronic inflammation are, pain of a sharp shooting, sometimes neuralgic, character, generally intermittent, and coming on towards night when the patient is tired.

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*A paper read before the Students' Society, Dental Hospital of London.

Periostitis may be divided into general and local, acute and chronic. General, when it attacks all the teeth at once, and is due to catching cold or to rheumatism. The patient should be treated generally, with local applications of poppyhead fomentations to relieve pain. Local, when confined to one tooth; if very severe or has become chronic, generally results in the extraction of the tooth. The symptoms of acute periostitis are: rising of the tooth in its socket, causing tenderness or pain on pressure, dull, heavy, continuous pain: the gums swollen red and inflamed, with a velvety feeling to the touch, which if left goes on to acute alveolar abscess. The symptoms of chronic are not so severe. The gums are red and congested, but may have only two or three enlarged blood vessels present. Pain of a grumbling character may give rise to neuralgia or severe headaches. Chronically inflamed roots are generally found to be absorbed and exostosed, and when other symptoms are absent the teeth should be pressed from side to side, which will cause pain if exostosis is present; also inquire for a similar history attached to any of the other teeth which have been extracted, as exostosis frequently attacks the roots of all the teeth in the mouth in turn.

Symptoms due to the pulp as distinguished from the periosteum. In an inflamed pulp, then, the pain may be throbbing or sharp shooting, and of intermittent character. In the periosteum the pain is dull, heavy, and continuous. Thermal changes, also sweet and salt substances, will cause pain in an exposed pulp, but not so with an inflamed periosteum. The surrounding gums and mucous membrane will generally be healthy if the trouble is confined to the pulp but with periostitis they soon become red, inflamed, and swollen, having a velvety feeling when touched. Pressure in the cavity with cotton wool held in a pair of dressing forceps will nearly always cause pain if the pulp is exposed, but not so with periostitis Pressure on the tooth itself will not affect the pulp, but will cause severe pain if the trouble be due to periostitis. When after a careful search for caries, and inflammation neither of the pulp nor periosteum of the tooth referred to can be accounted for, we naturally look for other teeth as the offenders. Pain which usually comes on when in a recumbent position is generally referred to the teeth, but neuralgia is generally worst when the patient is tired, as then the nerves are least able to battle with the irritation.

We next proceed to examine the mouth, looking for: exposed nerves, especially chronically inflamed pulps; diseased roots, especially chronic periostitis and exostosis; irritation of the nerve from a filling or nearly exposed pulp or pulp stones; impacted teeth, especially wisdoms. The wisdom teeth are the most common cause of neuralgia, as their roots are situated close upon the trunks of the nerves, and are sometimes perforated by them. Exposed nerves are best found by introducing a small plug of cotton wool on a pair of dressing forceps, which usually gives pain in the region referred to. Diseased roots may be found by tapping the teeth one by one, and by the presence of inflammation in the gums. For exostosis the teeth should be pressed from side to side. Irritation of the pulp may best be found by applying a piece of cotton wool soaked in iced water to each tooth. Impacted teeth are usually discovered from the absence of one of the teeth from the series, and signs of inflammation, especially swelling of the part.

THE EXTRACTION OF TEMPORARY TEETH.—With regard to the forceps, I think that the forceps which we now use in the extracting room for children's teeth are far from perfect. Why should we attempt to extract a child's temporary tooth with a pair of forceps which are meant for a fully grown man? Of course temporary teeth can easily be extracted with almost any forceps, but are we extracting so as to give the least possible pain? I think children's forceps should be so small that they can be held in the operator's hand so as not to be seen by the child. Foreeps should be made to fit as accurately as possible round the roots of the teeth to be extracted, with just sufficient room to clear the crown. I do not see why they should not be made after the same pattern as those for the permanent teeth, but they should be proportionately small. Temporary teeth as a rule in a patient child are not much trouble to extract, but when they have been retained in the jaws long after their time for removal, and their roots unabsorbed, they will often cause some little trouble to extract, as their roots are very divergent and the alveolus has become very dense around them. Temporary teeth will often be found lying on the gum in a necrosed condition, their removal is then most easily accomplished by means of the elevator and fore finger. A pair of large dressing forceps with serrated blades are also very useful to remove such fragments. Care should be taken in the extraction of temporary teeth not to go up too far, as there is some danger of injuring the permanent successor. For various causes the extraction of a temporary tooth is often not at all advisable. We must, therefore, do something to relieve the pain. If it is caused by an exposed nerve, a dressing should be applied of two parts of creasote to one of mastic on a little cotton wool; or a very good plan is to place a tabloid of cocaine over the exposure, and keep it in place with some cotton wool and mastic. This will generally relieve the patient from all further trouble, especially if instructions are given to keep the bowels well open.

THE EXTRACTION OF PERMANENT TEETH.—Before extraction is commenced a few precautions are necessary. The instruments should be thoroughly clean, and disinfected by dipping in a one-in-twenty solution of carbolic acid, or a good plan is to have a pot of boiling water always in readiness into which the instruments should be dipped for a minute or two before using. This acts in two ways, (1) as a disinfectant (2) and it warms the instruments ready for use. Warmth is exceedingly necessary for the comfort of the patient, as if the instrument is thoroughly warmed the patient will often scarcely feel the forceps going on to the root. On the other hand, if you apply a cold instrument to a sensitive periosteum you will give the patient a shock and cause him to flinch, and so lessen your chances of extracting the tooth. After the extraction do not forget to press the walls of the socket together with your fingers, as by doing this you bring into position again any fragments of the alveolus which have been forced outwards in the extraction of the tooth, and which, if left, often give rise to inflammation and much pain by irritating the periosteum. Here I must add that we should not try to do too much at one sitting. Some patients will experience very much more pain than others, especially those who have suffered from rheumatic fever and nervous diseases. Then again, patients who are very good at the time will often suffer very severely afterwards from headache and exhaustion. Although we can scarcely lay down any rules for extracting, yet, perhaps, after all there is something in the old rule of: "First grasp your tooth, then move it in its socket, and lastly take it out." To these fundamental laws I would like to add a few more. Always take the tooth in the direction of least resistance, or in other words, in the direction in which you feel the alveolus giving way. Lower wisdom teeth are generally best taken inwards as they are supported externally by a strong ridge, viz: the external oblique line. Upper molars on the other hand will move in the outward direction most easily, as their long palatine fang acts as a buttress against inward movement, and the alveolus on the outer side is much thinner. With regard to front teeth, I do not think I am wrong in saying that they may all be rotated from the second bicuspid forwards. I know it is no exactly right from a theoretical point of view to rotate first bicuspids and those teeth with flattened roots, but in practice I have been far more successful by so doing. The most typical teeth for rotating are the second lower bicuspid and the central incisors. If the bicuspids will not readily rotate they may be taken gently outwards. Incisors will come out most readily by taking them first inwards towards the palate, especially if the lingual aspect is much decayed below the gum, there is then less danger of a fracture.

Lower wisdom teeth which have no molars in front of them are often best removed with a pair of Read's upper root forceps. When the outer or inner surface of a molar tooth alone is standing, it will often be advisable to cut off the standing portion, in order to let the stump forceps go well on to the root. In extracting molar teeth with divergent roots, the dividing forceps are sometimes necessary. Having got the forceps well on, an attempt may be made to extract the tooth before crushing, as teeth will sometimes come out better with the dividing forceps than with the others. When the teeth are badly decayed, some operators use a spear-headed elevator, which they thrust in between the roots, and so loosen them for the stump forceps. Among the difficult teeth to extract may be mentioned those most delightfully lopsided molars described by Mr. Pearsall as oblique rooted teeth, from which molar forceps invariably slip, they are, I think, best taken with a large pair of root forceps. Teeth with honey-combed crowns are also often very difficult to extract, owing to the immense length of their roots and the firmness with which they are implanted.

The Elevator.—The most useful forms are the straight oval-shaped and the curved elevators, but some operators prefer the spear-headed form of straight elevator. The straight elevator is most useful in the extraction of the lower wisdom teeth when the molar in front is standing. For upper wisdoms it should not be used, on account of the liability of fracturing the tuberosity and pterygoid process. It should be carefully guarded with the forefinger, when introduced into the mouth, and thrust deeply into the socket, between the wisdom and the adjacent tooth. The elevator should then be turned on its long axis, so that its lower edge cuts into the root of the tooth, and raises it from its socket, the handle may then be drawn slightly forward and downwards. The thumb or finger of the left hand should at the same time be placed at the back of the tooth to prevent it going down the throat. To rotate the elevator on its long axis a fairly large handle is necessary, as little leverage is obtained. Great care is needed in moving the handle of the elevator much in the forward direction, as is sometimes practised, for then the leverage is so great that there is a danger of fracturing the adjacent tooth, or even the jaw itself. The curved elevator is most useful in extracting the roots of a first or second lower molar, especially the posterior root when the anterior has been removed with forceps. The elevator should be thrust into the socket behind the posterior root, and then the root can be turned out into the empty socket, the natural curvature of the root being in a suitable direction for it. I cannot agree with the plan of putting the elevator into the empty socket and bringing away the septum with the root, as I think you require much more force, and the parts become so bruised that you often get trouble afterwards.

Much more could be said of the complications of extraction, which are I think twenty-five or six in number, but time will not permit me to say more now. I hope, however, they will form the subject of another paper, together with hæmorrhage and pain after extraction which I have purposely left out. In conclusion, I must thank you all for the kind attention you have given me this evening, and I hope the discussion may prove more interesting.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The First Ordinary Monthly Meeting of the Session was held on the 7th inst.,at 40, Leicester Square, the President (Mr. J. Howard Mummery, M.R.C.S., L.D.S.Eng.,) in the chair, supported by a full attendance of members.

The President, rising, welcomed the members at the commencement of a fresh session, and referred with regret to the loss of three members by death since their last meeting, viz. :—Mr. Charles Vasey, an original member, who had held the posts of President, Librarian, and Secretary ; Mr. Richard White, of Norwich, also an original member, and Mr. Edmund Kelly, who joined the Society in 1876.

The minutes of the previous meeting having been read and confirmed, the following gentlemen were admitted to membership:—Messrs. A. R. Colyer, Percy Edgelow, Mansbridge, Rushton, Wrighton, W. D. Moon, of Newcastle, J. Amoore, of Edinburgh, and P. B. Reading, of Sydney, Australia.

Mr. H. W. Stoner, L.D.S. Eng., was proposed for membership from personal knowledge, by Mr. W. A. Maggs and Mr. J. Mansbridge, and from general knowledge by Mr. U. A. Carpenter Harris.

Mr. E. LLOYD-WILLIAMS mentioned a case of a supernumerary tooth in an infant aged two years, presented at the Westminster Hospital a week previously. The tooth was cut at thirteen months, and a model was taken when the child was two years and one day old. The case he believed to be rather rare, and was in fact the only one that he himself had seen of the kind. The tooth itself was interesting from the fact that at first sight it appeared to be a supplemental central, but further examination showed it to be an ordinary supernumerary tooth. Mr. Williams presented the model to the museum.

Mr. DAVID HEPBURN, having had an opportunity of examining the model, thought the case similar to one sent to him by Mr. J. F. Corbett, who at that time was resident in Dublin. This case he showed to the Society about twelve years ago. He had the teeth by him now. Perhaps Mr. Corbett, who was present, would be able to give them some more information about it.

Mr. J. F. CORBETT regretted to say that he did not take a model of the child's mouth. There were two supernumerary teeth; the child had all the temporary teeth standing, and these two were behind the two lower centrals.

Mr. ACKERY, referred to a case reported by himself about ten years ago, in which there were three supernumeraries or supplemental teeth in the lower jaw; they were right inside the arch, one on either side, one a lateral and the other a canine. The interesting part of that case was, that he was able after an interval of six or seven years to show the patient again, when the position had somewhat changed. There were four normal incisors, two supernumeraries, and two temporary teeth still persistent. He had a model of the case in both its phases.

Mr. M. HOPSON some three years ago had a case which came under his notice of a supernumerary in the upper jaw removed from the mouth of a child aged six, it geminated with the left central. He had the specimen, and should be pleased to present it to the Society.

Mr. Henri Weiss exhibited a mouth mirror of his own contrivance, the object of which was to set the hand at liberty, and avoid the necessity of frequently taking up and putting down the mirror as now. The object was attained by means of a ball and socket joint in conjunction with a clamp to be attached, preferably, to the lower first bicuspid.

Mr. Storer Bennett then read a paper, entitled, "Some Mechanical Devices for the Retention of Artificial Dentures."

He said that the aim of the experiments which he had been conducting for some time was to produce *hinged* bands, whereby teeth might be clasped around their most constricted portions, unimpeded, nay, even assisted by the overhanging portions of their crowns; and claimed that by his variation from the ordinary construction, more accurately fitting, and in many instances smaller, plates might be used. The bands were of two varieties, the first being self-adjusting, and on the principle of the spring rings frequently attached to watch chains; the other, a modification of the ordinary brooch joint.

To make the self-adjusting band: (1) Take a piece of thin gold tube about $\frac{3}{8}$th of an inch in length. (2) Make solid at one end for about $\frac{1}{16}$th of an inch by soldering into it a piece of gold wire. (3) Tap the opposite extremity with a screw for $\frac{1}{32}$nd of an inch. (4) Saw a slot through the middle of the solid end of the tube parallel to its long axis, extending as far back as the hollow part, and rather farther on one side than the other. (5) Fit a small piece of flat gold into the slot to form a tongue or central portion of a hinge, the width of the tube, but projecting slightly beyond its anterior extremity. (6) Drill a hole in the solid portion of the tube and tongue at right angles to the slot. (7) Pass a pin through them, the pin being ultimately rivetted or screwed. A band having been accurately fitted to the model, is soldered to the anterior extremity of the tongue, and when this is replaced in the slot and transfixed by the pin the whole forms a hinged band. A piece of extended spiral spring is now thrust into the posterior end of the tube until it comes in contact with the back portion of the tongue, and is then held in position by a small gold plug screwed into the tube behind it.

It will greatly facilitate the accurate cutting of this slot if a small steel tube with a slot in one end be used as a guide, and if a hole be drilled in the template across the slot it ensures the hole in the gold tube being properly placed.

The band so formed may be attached to a gold plate by removing the spring and soldering the tube in the most suitable position, the spring being subsequently replaced and retained by the screw plug.

Where vulcanite is to be brought anywhere near the hinge, it is necessary before packing, in order to exclude the rubber, to introduce a little osteo, which may be subsequently dissolved away with hydrochloric acid. The case is then ready for use.

It sometimes happens that it is convenient to have a band which can be opened and left in this position while the plate is being inserted or removed from the mouth ; the band then being closed, and remaining firmly fixed until intentionally opened again. In this case the band is soldered to the piece of tube which forms the central portion of a brooch joint, the band being carried sufficiently beyond the tube to press on a small flat spring, bent into the shape of a horseshoe magnet. This causes the joint to open or close with a snap, the spring locking the band securely in either position. In order to prevent the ingress of rubber during packing, or of food when in use, the joint and spring are enclosed in a small gold box (measuring only $\frac{3}{16}$ths of an inch in its largest diameter), which can be soldered to a plate or embedded in vulcanite.

Cases sometimes present themselves in which one or two teeth have been lost on one side of the mouth only, the resulting space being wedge-shaped, with the base towards the gum owing to the tilting of the adjoining teeth. Such cases are usually treated, if treated at all, by inserting a plate which covers a large portion of the mouth, in order to insure due steadiness and safety. So large a plate is a source of such inconvenience to the wearer that in many instances its use is abandoned, and the patient is therefore frequently dissuaded from having such a gap filled up at all. It will be admitted that the smaller plates can be made—consistent with their safety, steadiness, and ease of insertion and removal—the better for the patient and the teeth.

By the use of the locking bands referred to, Mr. Bennett claims that the treatment of such cases becomes easy. A plate no larger than the space, but which it accurately fits, has ordinary bands adjusted to the lingual surface of the tooth in front and behind the gap. Two locking bands are then adapted to the labial surfaces of these teeth in such a way that, when open, they are no wider than the width of the gap. Such a plate, when placed in the mouth with the bands open, may be dovetailed into position by pushing it outwards from the lingual towards the buccal surface, and is secured by closing the bands, the overhanging crowns effectually preventing any upward displacement.

Instead of a back tooth, occasionally a front tooth is lost, leaving the same wedge-shaped space with the base towards the gum. In a case of that kind a plate tooth may be attached to a small plate by means of a brooch joint in such a way that the tooth may be placed in position by turning up the teeth completely out of the way. The plate may then be placed in the wedge-shaped gap, dovetailed into position, and the spring holds it firmly in its place. The method is as follows : A very small plate is used which accurately fits the gap ; a thin flat tooth, having the pins as near to the neck as possible, is backed and fitted in the usual manner so that a small band may be fitted on to the buccal surface of the necks of the adjoining teeth. The small plate has a very small band passing behind the tooth on either side of the lingual surface to prevent the plate being dislocated forward. Next a piece of 12-carat plate has two parallel lines cut into it, so as to somewhat resemble a comb with three equal teeth. On the outer part of the comb a small piece of tube is soldered. This middle piece of tube is then soldered on to the backing of the tooth, a pin is run through the hole, forming a common brooch joint which allows the tooth to move upwards and downwards on the comb. The back of the comb is now soldered to the plate immediately behind the backing of the tooth. If now a pin is run through all the three pieces of tube so as to unite the unattached teeth to the plate itself, it gives a tooth working on a hinged joint, which may be turned up entirely while the plate is being dovetailed into position, and may then be closed down. If at the same time a little tongue of gold is soldered to the central tube so as to press on the middle portion of gum, this being a spring, will press upon and retain the artificial teeth either in a horizontal or vertical position. When, as sometimes happens, the buccal bands are too conspicuous, a very small plate is fitted accurately and reduced to the size of the nearest part of the gap. An ordinary tooth is then taken and backed in the ordinary manner; two blades are then fitted, and one of them soldered to the plate. On the back of the backing of the tooth a piece of small gold tube is soldered running transversely across the gap, one end of the gap being closed by the plate and the other end open. A small slot is now cut parallel to the long axis of the tube, a piece of wire is then soldered in such a position as to be able to travel outwards and inwards. Now, if a small piece of open spiral spring is thrust into the tube before putting the wire in its place, the spiral spring will tend to throw the band outwards towards the tooth. The objection might be made to that treatment that the pressure of the spring on the natural teeth would loosen or displace them, but from observation for a considerable time Mr. Bennett did not find it happen in practice owing to the spring being weak. One case he said had been worn for more than a year, another for eighteen months, and no such unfortunate result had been noticed. Whether ultimately such a result would take place he could not say.

At one time Mr. Bennett had hoped that the alloy known as "nickel-steel," *i.e.*, nickel and steel combined in order to prevent the rusting of the steel and yet retain its elasticity, might be available; however, it had been so difficult to put enough in to prevent the rust, without at the same time depriving the steel of its elasticity, that he had so far been unsuccessful.

Fifteen-carat gold is used for the spiral springs, and what is known among jewellers as "twelve-carat pale" for the bands.

DISCUSSION.

THE PRESIDENT said that the paper to which they had listened was a very interesting and valuable one; they had always thought hitherto that hinged teeth were peculiar to fishes. Mr. Storer Bennett had shown a large amount of ingenuity in the contrivance of the band; it seemed to him that the small lower denture got over a serious difficulty in an effectual manner.

Mr. HENRI WEISS said that Mr. Storer Bennett had dealt with the subject in such a thorough and lucid manner, that it seemed that there was little left to be said. He gathered that there was no steel employed? so that there would be no degeneration in the apparatus by constant wear. Would there not be the liability to an accumulation of tartar which would retard its action?

Mr. T. S. CARTER, of Leeds, asked if the patients themselves found any difficulty in opening the clasps? and also how Mr. Bennett managed to increase the strength of the clasps. Some patients liked them held lightly, others very firmly, there appeared to be no regulating medium.

Mr. David Hepburn said that if the paper did not call forth any very animated discussion he trusted that Mr. Bennett would not infer that it was from any lack of interest. It appeared to him (Mr. Hepburn) to be a communication of the greatest possible interest, but it was not easy fully to grasp the process and form a sound judgment upon it at a first hearing ; in order to discuss the method with any advantage it was necessary to carefully examine the specimens. The only point that occurred to him at the moment was in connection with the hinged teeth ; it seemed to him that in many cases the hinges would interfere with the bite, especially in cases of a close bite.

Mr. F. J. Bennett, having had the opportunity of examining the specimens from time to time, felt convinced that much which might appear obscure and difficult to understand from a rapid description and rough diagrams would become clear and easy of comprehension on a careful examination of the complete specimens standing on the models. With regard to the swivels, he might say he thought there was no more difficulty in the apparatus employed here than found in the adaptation of them in other cases where swivels were employed. No doubt Mr. Storer Bennett would be able to say how long the cases had taken to make, but he believed that they did not take very long, and that no very scientific training was required. Another point was that these cases were not merely untried specimens, but cases that had been worn for more than a year ; they were therefore removed from the category of scientific toys and might be regarded as tried inventions.

Mr. E. Lloyd-Williams thought that they all had to thank Mr. Storer Bennett for attempting to overcome some of their difficulties. That he would entirely get over them he felt inclined to doubt, and thought that in time Mr. Bennett would be able to get some appliances of a more simple character. There was one difficulty, viz. : the adjustment of the clasps, when the clasp was *in situ* it would of necessity leave a space between it and the teeth in which the food would lodge ; he thought that this was a decided drawback, and if Mr. Bennett could improve the arrangement so that some of the drawbacks could be done away with the process would be of extreme value, but he thought that in any case the Society were much indebted to Mr. Bennett for his ingenuity, and the able manner in which he had explained the method.

Mr. J. H. Badcock wished to ask Mr. Bennett what he made the little pins with, whether gold, or what? If gold, he thought that they would very quickly wear through. Another objection to his mind was that of the bands clasping the teeth where they did, as it was likely to induce decay; the proper place seemed to him round that portion of the tooth where the enamel was thickest.

Mr. Storer Bennett in reply said, in reference to Mr. Weiss's remarks, he might observe that tartar could very readily be dissolved by putting it in a strong solution of hydrochloric acid. With regard to the bands becoming covered with tartar, he thought that it would be obvious that there were excellent facilities for cleaning. Mr. Carter asked if any patients found difficulty in opening the bands; so far he had not found any patient who had felt the difficulty. With regard to the strength of the spring, it might be adjusted to any point at the time the plate was being made by putting a longer or shorter swivel spring, or putting one of thicker or thinner wire. With regard to the locking bands, the spring was a small piece of flat gold made as thick or thin as would fit the box. Again, if it were absolutely necessary to vary the strength of the spring, it could be done by removing the pin which ran through the brooch joint. Mr. Hepburn drew attention to the possibility of the bite incapacitating one from using these plates. Of course he (Mr. Bennett) did not pretend that they might be used in *all* cases; he only contended that they had difficult cases for which this apparatus would sometimes offer a solution: he did not for a moment contend that it was universally applicable. It was for the reason of not interfering with the bite more than absolutely necessary that he laid stress upon the fact that the pins should be as near the surface of the tooth as possible. In answer to Mr. Lloyd-Williams, with regard to the space behind the clasps, he would like to ask him if he had ever seen an ordinary band with an ordinary clasp exhibits pace behind it; if so, he did not think that these bands were any worse than those, these bands he (Mr. Bennett) contended were capable of being more accurately fitted to an under-cut or overhanging tooth than any ordinary band could be, but of course unless properly made a gap would exist. Mr. Badcock asked if the pins were made of gold; everything connected with the apparatus was made of gold except the base, which in the instance of the particular model under description was made of German silver, as it was intended for the Museum and the expense of gold was unnecessary but in ordinary cases only gold was used. The question of the most proper position of placing the band should not, he thought, be discussed at such a meeting. He begged to thank the gentlemen for the discussion which had taken place, but confessed that he should have liked to have heard the opinion of many others present. Before concluding, he would remark that the various parts of the mechanism were originally constructed in his own workroom, but had subsequently been made by Mr. Baker, jeweller, of 55, Great Marlborough Street.

THE PRESIDENT observed that if the discussion had flagged in any way it was not for want of interest; he was sure that they all hailed with gratitude anything that helped them over serious difficulties which occasionally arose when making artificial dentures.

The next meeting was announced for December 5, when a paper would be read by Dr. Sims Woodhead, on "Inflammation in Bone." The usual vote of thanks concluded the meeting.

The Students' Society of the Dental Hospital of London.

ORDINARY General Meeting, held November 14th, 1892, W. B. PATERSON, Esq., President, in the chair. The minutes of the previous meeting were read and confirmed. Those gentlemen present who were elected at the last meeting then signed the Obligation Book.

Mr. D. P. GABELL proposed and Mr. R. W. GILLETT seconded, Messrs. A. Orange and F. W. Jones for election as members, and the following gentlemen who were proposed at the last meeting were duly elected, viz.: Messrs. S. T. Wale, W. S. Newell, H. W. Norman, C. Cannell, E. K. Cannell, S. T. Rooke, M. P. Powell, H. Nicholson, N. H. Lean, E. Picton, C. Talintyre, G. E. Wilson, R. Watson, J. Nicol, H. G. Newland, J. H. Mathews, E. H. Mountford, A. C. Strand, C. E. Carter, W. Johnston, E. E. Cardwell, J. H. Gartrell, J. Humphreys, G. S. Jones, C. S. Prideaux, C. G. Pearse, G. E. Frost, N. G. Bennett, G. H. Harden.

On Casual Communications being called for, Mr. SEYMOUR showed a right upper wisdom, and attached to it the tuberosity of the superior maxilla which had been brought away in extraction. The patient first applied to him in great pain, having been to another dentist previously, and that gentleman had experienced so much trouble in attempting the extraction, and used such violence, that both patient and operator came to grief on the floor. In this manner it is thought that the fracture occurred; however, when seen by Mr. Seymour the tuberosity was quite loose and fixed to the tooth, and he, in relieving the patient of the loosened wisdom, was forced also to take away the attached piece of bone.

The President asked whether the elevator had been used on this occasion, and also if the hamular process had been fractured too, and in the latter event whether Mr. Seymour had received any complaint as to the patient being deaf on that side.

Mr. Seymour replied that nothing so serious had happened, as after the removal of the tuberosity the patient had just as good hearing faculties as before. The elevator had not been used.

The President then explained at some length the result which the breaking of the hamular process would have upon hearing, by reason of the tensor palati muscle, which winds round it previous to insertion in the soft palate and margin of the Eustachian tube, being thrown out of proper action from the absence of such a *point d'appui*. The muscle not only tenses the soft palate in the act of swallowing, but also opening in some measure the throat end of the Eustachian tube, thus allows air from the nasal cavity to travel up it into the middle ear and support the membrana tympani, or "drum" of the ear, from being driven in by the pressure of the atmosphere on its external surface. And any interference with this balancing action upon the "drum," by the cutting off of the Eustachian tube, would of course create deafness. He mentioned that he had personally seen two cases of fracture of the tuberosity, and in one it was accompanied by fracture of the hamular process, and deafness, which latter fortunately was not of permanent duration. He also briefly alluded to the plan of inflating the Eustachian tube through the nose to drive out a bulged-in membrana tympani.

Mr. May said that he had heard of a practitioner who invariably used the elevator in extracting upper wisdoms.

The President remarked that such operative procedure was very much to be deprecated.

Mr. May then showed a new mouth mirror with a raised rim for the purpose of carrying and also catching amalgam filling in upper molar cases. He also exhibited a new pair of forceps, of a kind which illustrated a cross between the Read and the ordinary curved bayonet forceps, useful for upper wisdoms, inasmuch as the blades were brought into a more vertical position on the tooth.

Mr. Prideaux presented to the Society on behalf of Mr. Rymer a copy of the second edition of the "Note Book for Dental Students on Dental Anatomy and Physiology."

The President then called upon Mr. R. W. Gillett to read his paper on "Points in Extraction." (See page 533).

The President remarked upon the wide field for discussion the paper presented, but suggested that the discussion might be limited to the points in extraction mentioned.

The discussion was opened by Mr. Moseley, who thought that deceiving children by hiding the forceps up the sleeve was very bad practice, as the confidence of the patient should always be retained, and as regards the extraction of first upper bicuspids, he considered an exceedingly bad plan to rotate. He advised using great force in either driving up or down for teeth.

Mr. D. P. Gabell asked for information upon the matter of severe pain often experienced after the extraction of lower wisdom teeth, and of the manner in which the inferior dental nerve was implicated. He thought the shock felt by the patient on the first seizure of the tooth was not due to the cold instrument so much as to the cutting down between the gum and alveolus.

Mr. Clarence pointed out that the instruments used in the extraction room for children's teeth were quite efficient both for upper and lower teeth ; he believed that it was better, when possible, to take out temporary teeth with the fingers, so that the child was not frightened by the sight of forceps ; he could never advise the rotation of first upper bicuspids. In the case of the extraction of front teeth or stumps with a view to an artificial denture, great care should be taken not to lacerate the gums. He suggested the use of the thin upper bayonet forceps for the extraction of fractured lower wisdom and bicuspids, with which he had been very successful ; and in the use of the curved elevator he could not agree with putting it behind the remaining stump of a lower molar, but rather, especially when time was an object, would push it down the empty socket of the extracted root and raise the remaining one, bringing with it the septum.

Mr. May, in rising, laid stress on the thorough marking out of all roots before attempting to put the forceps on them. He also advised Mr. Gillett not to rotate first upper bicuspids or lower centrals, and in using the curved elevator thought the best method was that of going down the empty socket, and breaking down the intervening septum to get at the remaining root.

Mr. Halliday observed that in his opinion many fractures of teeth were brought about through the operator not using sufficient force in driving up or down for the teeth.

Mr. Peal did not agree that teeth wanted forceps to fit to such a nicety as had been stated, but rather advocated loose-jointed instruments, which would themselves become adapted to the curves of the tooth, and stated in illustration the amount of work that could be done with the Read pattern instrument; he also impressed on students the desirability of giving much time to practising extractions during their hospital career.

Mr. George Seymour also held that forceps, those for upper molars especially, should be loose-jointed, and thought that suppuration after extraction was often due to instruments not being properly disinfected, and advised that lower second molars should be taken inwards more than outwards.

Mr. Percy Smith said that he gathered from the paper that no reflex pain could be felt on the opposite side of the mouth, and quoted a case which came under the care of Mr. R. H. Woodhouse, of a man who had a bad lower molar on one side, but described the pain as being due to the corresponding molar on the other side; he eventually went away without having either extracted. He advocated the use of warm water for dipping the instrument into previous to operating, and in extracting children's teeth care should be taken not to lacerate the gum, but when necessary it should be cut when the teeth were held down by it; he strongly advised that all instruments should be thoroughly sterilized.

Mr. D. P. Gabell, in referring to the case mentioned by Mr. Smith, also gave an illustration of pain referred from the bicuspid on one side to the canine on the other.

The President desired that this case should be followed up and full notes be taken, as such transferences of pain across the middle line were of great interest.

Mr. H. S. Prideaux thought that the ordinary Read forceps was too large when used upon bicuspid roots, and advised a finer-bladed pair in those cases.

On the motion of the President, it was proposed by Mr. Holford and seconded by Mr. Clarence, that the meeting which had by the rules come to a close should be prolonged for ten minutes.

Mr. Nichol then asked whether it was true that cocaine had a soothing effect on the pulp, as he thought that it had a specific action only on nerve endings, and explained that cold acted as a sedative rather than an irritant in the case of using an unwarmed instrument.

Mr. Evans testified his personal experience of pain after extraction, he suffering for fully a week after the operation, although tincture of opium, chloride of zinc, carbolic acid, and other obtundents had been used. The tooth extracted had had the nerve destroyed and the roots filled. Some discussion arising upon the subject, Mr. Moseley said that he was present at the time of the operation, and had noticed that the apex of one of the roots had been left in, which in all probability explained the cause of pain. (Laughter).

Mr. Holford then described a case of severe pain after extraction, which had been relieved by the use of a piece of chloride of zinc, as large as a pea, placed down the socket. He had not observed any ill effects from its use in that case.

Mr. Trewby, referring to Mr. Evans' case, suggested that a small piece of the amalgam stopping might have dropped down the socket, for when this happened extreme pain was felt until the amalgam, acting as a foreign body, was thrown off by nature.

Mr. J. P. Smith mentioned a case in which many drugs were used, and a successful result was only obtained by the use of tincture of opium.

Mr. D. P. Gabell suggested that a purgative timely given overcame this continuous pain sometimes.

The President in reply to Mr. Gabell's question of much pain resulting from the extraction of lower wisdom teeth, explained that the close proximity of the inferior dental nerve to that tooth was sufficient to account for the pain experienced, and quoted a case in which the roots had surrounded the nerve. In the course of this illustration he mentioned a case in which the inferior dental nerve had been destroyed by the use of strong carbolic acid down the sockets, and stated that sensation, although impaired for some three months, eventually was completely restored.

He suggested that Mr. Gillett would have to prepare himself to reply to his critics on the question of rotation of the upper first bicuspids, which tooth he regarded as frequently the most difficult to extract in the upper jaw. He pointed out that the removal of the broken crown of a molar tooth was not always needful, as a special pair of forceps to meet the difficulty, devised by Mr. W. Hern, were in the hospital, the only objection to the pattern being that the ends of the blades often turned up. He quite agreed with the reader of the paper that the alveolar margins should be firmly pressed together after tooth extraction, for thereby after-pain was greatly lessened and the healing process assisted. Such pressure too was of especial value in the case of a dental cyst.

The question of elevating the posterior root of a lower molar when the anterior had been extracted, had elicited contrary opinions in the discussion as to modes of practice.

Doubtless, elevating from the empty socket with a curved elevator was somewhat harder work, and inflicted considerable crushing force upon the gum and underlying bone. It might, however, with some be a slightly quicker operation.

Finally, he emphasized the absurdity of simply dipping forceps after use into a carbolic acid solution of weak strength, found in certain hospital extracting rooms which might be known to them, in gallipots of limited number and capacity generally in use without change for a considerable number of patients during the day, and dipped, too, with a childlike simplicity of belief that an antiseptic and cleansed condition of the instruments would result. He strongly insisted upon the greater value of hot water and clean cloths for such instruments, and looked forward to seeing a supply of boiling water laid on to such rooms large enough to banish that make-belief antiseptic—the present gallipot and its mixed contents. He then called upon Mr. Gillett to reply.

Mr. Gillett in reply stated that he had no intention of deceiving children in extraction operations. He was still of opinion that a special small set of forceps for children was highly desirable. With regard to upper first bicuspids he considered they could be rotated to a certain extent, certainly sufficient to loosen the tooth and thereby render extraction of them in the outward direction easier. Mr. Gillett having further replied to the previous speakers, thanked the President and others for assisting him in the discussion, and the members generally for the interest they had shown.

The President, having proposed votes of thanks to Messrs. May and Seymour for their Casual Communications and Mr. Gillett for his paper, announced that the next meeting would take place on December 12th, when Mr. Curling Hope would read a paper upon "Electricity as applied to Dentistry." The proceedings then terminated.

The General Council of Medical Education and Registration.

The PRESIDENT (SIR RICHARD QUAIN, Bart., F.R.S., M.D.) in the course of his address said, in accordance with the resolution of the Council on the subject on "covering" by dentists, which was referred to the solicitor with a request that, after communicating with the Dental Association, he should report to the executive committee at the present meeting, the solicitor had presented a report to the effect that it seemed to him as much a duty of the Council to protect the public in the matter of dentistry as in medical practice; he advised the Council to issue a warning to dentists, through the medium of the British Dental Association, who were willing to undertake the duty, similar to that conveyed by means of a minute of the Council to medical practitioners before taking more decided action in regard to the offenders. Sir Richard continued: "I cannot conclude these few observations without remarking that year by year the duties devolving on the Council become more and more definite, more and more important, and lead to more decided practical results. I can well understand that in the early and difficult days of the existence of our Council the duties were unfamiliar to many of its distinguished members, and that they found considerable difficulty in formulating and surmounting some of them. Then, too, it was thought and expected from the outside that much more could be accomplished by the Council than it had authority for doing. It is now recognised—and it is my hope that it will be more and more recognised every year—that the Council is doing all in its power to secure the higher education of the profession and to elevate and maintain its character in all that is essential in connection with the welfare of the public within the lines marked down for us by Parliament. I can recognise that this Council, which I can better understand in my present position, composed as it is of the representatives from the great teaching and licensing authorities of the country, of representatives of the Crown and of representatives elected by the profession at large, should be, and is, a body well constituted to perform these important duties. In some other countries these duties devolve on Government officials; happily here they are placed in our own hands, and I am confident that we shall not fail to prove worthy of the trust thus reposed in us."

Covering by Dentists.

Among the business before the Council was a report by Mr. F. W. Farrer, the solicitor to the Council, with reference to the statement submitted to the Executive Committee by the British Dental Association. Mr. Farrer explained in this report that the statement of the Association mentioned fourteen cases of covering by dentists, of such a character as would, if proved against a medical practitioner, involve the removal of his name from the Register. It seemed to him to be as much the duty of the Council to protect the public in the matter of dentistry as in that of medical practice. The Executive Committee would, however, recollect with what care the Council proceeded in the case of medical practitioners, what years of warning it gave them, how it promulgated a minute upon the subject and took the utmost pains to convey the minute to every medical practitioner, and how several cases were tried and practitioners warned before any name was taken off the Medical Register for the offence of covering. He would advise the Council to issue a similar warning to dentists, and to cause such warning to be conveyed to every dentist on the Register through the British Dental Association, who had expressed their readiness to undertake the task. Looking to the position of a very large number of dentists and to the mode in which they had been in the habit of practising, he thought that covering in their case should be dealt with even more cautiously, if possible, than it was dealt with in the case of practitioners on the General Medical Register.

Sir W. Foster moved that the solicitor be directed to prepare a draft warning to registered dentists against the employment of unqualified assistants analogous to that given to registered medical practitioners on April 21st, 1888, and that the draft warning be submitted to the Council. The duty of the Council, he said, was to give all the help they could to the dental profession in putting down what was an illegal and undesirable practice.

Dr. Glover, in seconding the motion, said he was very glad that the Council had come to see the propriety of extending the same principle as to covering to the dental profession as they had extended to the medical practitioner.

The motion was agreed to.

Dental News.

The National Dental Hospital and College.

THE Annual Dinner of the Past and Present Students, and the Prize Distribution in connection with the above, took place on the 25th ult. Sir James Crichton Brown, M.D., F.R.S., occupied the Chair, and was supported by more than 100 of the Past and Present Students and Friends, including Messrs. Sydney Coupland (Dean of Middlesex Hospital), Stanley Boyd (Dean of Charing Cross Hospital), Geo. Field (Dean of St. Mary's Hospital), Munro Scott (Warden of London Hospital), Morton Smale, C. S. Tomes, J. Howard Mummery, J. Smith Turner, F. Canton, Thomas Gaddes, David Hepburn, S. J. Hutchinson, &c.

The Chairman, in giving the toast to the Queen, remarked that in a body of gentlemen who had so much respect for the crown of the tooth, he felt sure that the mention of the Crown of the Realm would be received with due veneration.

The Chairman called upon the Dean (Mr. Harry Rose) for his report.

The DEAN in the course of his report remarked, that notwithstanding their hampered condition the number of cases treated during the year exceeded 33,000. He was happy to say that they were now within a measurable distance of the time when they would be able to take possession of their new home, which they expected to be ready by this time next year. As when the Dentists' Act was passed it did not seem right for a Public Charitable Institution to withhold knowledge from those who sought it in a legitimate manner, they had from time to time permitted Medical men, besides registered Dental practitioners, to take out short terms of Hospital practice; that privilege was now limited, and under the altered circumstances of the present day would probably in the future be found inadvisable, except in the case of Army and Navy surgeons. In conclusion, he looked forward to a long and glorious future in which the National Dental Hospital and College would continue to take its share of teaching, associated side by side in friendly emulation with the other Dental Schools.

Having distributed the prizes and certificates as follows:—Rymer Medal, Mr. F. M. Farmer; Dental Anatomy, Medal, Mr. R. E. Nicholls; Certificate, Mr. E. C. D. Bascombe; Dental

Surgery, Medals, Messrs. R. E. Nicholls and J. S. McFarlane; Certificates, Messrs. F. M. Farmer and R. W. Ward; Theoretical Dental Mechanics, Medal, Mr. J. S. McFarlane; Certificates, Messrs. E. C. D. Bascombe and F. M. Farmer; Practical Dental Mechanics, Certificate, Mr. Barrett; Materia Medica, Medal, Mr. F. M. Farmer; Certificate, Mr. J. S. McFarlane; Histology, Certificates, Messrs. Beverley and Kelsey; Metallurgy, Medal, Mr. R. E. Nicholls; Certificate, Mr. Reece; Students' Society Prize, Mr. R. E. Bascombe; Entrance Exhibition, Mr. Norman Reeve; Ash Prize, Mr. H. B. Rowe; the Chairman rose to propose success to the National Dental Hospital and College. He said, that they were met together on an occasion like that present, not so much for a feast of reason as for a flow of soul; and that he should better acquit himself as their Chairman, if he struck a chord of sentiment, than if he should discourse learnedly on Dental Pathology, or attempt to give a dissertation on the value of Crown, Bar, and Bridge Work. He did not think it would be difficult to strike that chord, for, if he were not mistaken, it was stretched very tensely at the present moment, ready to respond to the slightest touch. This was a dinner of the past and present students, and it was composed therefore of those who had come to enjoy the pleasures of memory, and those who had come to expatiate on, and indulge in, the pleasures of hope. There were those who had come from great distances to revive the feelings of their student days, to grasp the hand of fellowship with old companions, and to show their continued interest in the institution in which their education was obtained. There were here also the present students, who were preparing themselves for a useful and honourable career; who were glad to sit with the men who had helped to make the reputation of their hospital; and who, with the rosy presentiment of youth, believed that though not all born with silver ladles in their mouths, they were yet destined to introduce gold plates into the mouths of others on a tolerably large scale. (Laughter.) There therefore existed a large fund of sentiment to draw upon; the mellow and genial sentiment of "Auld Lang Syne" on the one hand; and on the other, the sanguine and exuberant emotions of the gentleman who is "Off to Philadelphia in the Morning." (Laughter.) At all the dinners of the National Dental Hospital this mingled strain of sentiment, in connection with the past and present was always with them, but it was more than usually so that evening, as their hospital was about to make a great change; it was about to be translated to a higher sphere ; it was about to leave its old premises and go to a new and well ordered domain. That, no doubt, was necessary, but he could not help thinking that to some the "extraction" would be a process involving more or less pain, that the withdrawal from their old habitat to a better sphere would occasion a pang of regret to very many. He was not there to praise the old building ; architecturally speaking, it could not be said to vie with the Parthenon ; nor did its interior remind one of Orchardson's pictures ; to be quite candid, its lecture-rooms savoured of a dinginess which suggested "Bleak House." But it was a place where good work had been done, where human suffering had been alleviated, where admirable teaching had been carried on ; and, as it was the nature of men to refer with pride and pleasure to the work which had been achieved in spite of obstacles, so some might be thinking of the beneficient labours that had been carried out, and might have a feeling of regret that its doors were about to be closed. But besides the students of the past, there were others who might cast a look of gratitude and regret at the hospital : he alluded to those who entered in the morning in agony, and came out avenged of their tormentor ; those, who by skilful and artistic touches, had their shrunken and hollow cheeks made round again ; whose digestions were restored ; and who received admirable advice as to the avoidance of the innumerable ills which the teeth are heir to. With reference to his own visit to the hospital, he could not say that he was much impressed with the two departments without and within the veil, but with the stopping-room he was very much impressed, and no one could visit the room without being very much struck, when he saw some thirty persons all seated in the same attitudes with their mouths wide open, as if engaged in singing a dumb chorus ; if the chorus could be interpreted, he was sure it would be one of laudation of the dexterity of the staff and students, from whom they received such great relief. He had been told that a stream of almost equal dimensions flowed through the hospital every morning, and therefore he unhesitatingly affirmed that it was doing a great public work and was deserving of a great public support. In the new building, the plans of which he had examined, they would certainly have an establishment unsurpassed by any in Europe for the completeness of its arrangements. The wise munificence of a lady had been backed by the wisdom and experience of their staff, so that they would have a building perfect in its details ; they would have an admirable workshop, an admirable set of workmen, and they must enhance the usefulness of their institution. They would have greater facilities for teaching, and great facilities for the study of Dental Pathology, and to that he attached great importance, for there was no finality to dentistry; and, notwithstanding the important researches of the past, there was still a great field, both scientific and social, open in the future. That truth was brought vividly before him the other day when a good but foolish woman was deafening and sickening him with the praise of Count Mattei's remedies, and beseeching him try them. At last he turned upon her and said, "Cancer on the brain! no, he did not happen to have any cancer cases on hand, and if he had he would not venture to trifle for a moment with that disease; but if she could show him that dental caries could be arrested by Mattei's methods he would bow down to him as the saviour of society." She declined the challenge. If Count Mattei came to him, he should venture to say to him, "Sir, go and have your jaw fractured in a caravan, and drown your shrieks in the brazen thunders of the ophicleide." (Laughter.) Now, he had detained them so long that he had scarcely any time left to say anything of the Dental Profession, for which they were preparing yourselves; he could say nothing beyond this, that it always commanded his unqualified admiration and respect; he had some good friends in it, and he hoped he should have more before he sat down. Year by year it was linking itself more closely to the profession to which he belonged, and to which some of his brethren around him belonged—differentiated in practice they had a common basis, the anatomical and physiological basis; and a common ground of action, the welfare of humanity. On the border of their profession, as on his own, there were some questionable hangers-on; men who, hastening to be rich, had forgotten to be honest, but they were gradually separating themselves from these. Their Register, necessarily at first somewhat elastic, was being purified, and the diseased portions were being replaced by thoroughly sound tissue. As regards that Register, the regulation of which was being controlled by the Medical Council, he thought, on the principle that registration should accompany taxation, there should be a dentist, who was also a qualified man, on the General Council to take part in all its deliberations, at least, as far as dental affairs were concerned. The dental profession was quite capable of furnishing men who at the Board of the General Council would add dignity and weight to its proceedings, and it was to be noted that that profession had contributed a very large sum to the exchequer of the Medical Council. It occurred to him to remark that it seemed scarcely expedient that a dentist who was already on the Register by virtue of a surgical qualification, should have to pay the full fee of five guineas for a dental qualification; and *vice versa*, one who was on the Register by virtue of a dental qualification should have to pay the full fee for additional surgical qualification; he would say, once on the Register all additional qualifications should pay merely the nominal fee of 5s. In conclusion, Sir CRICHTON BROWN referred to the subject of curative and preventive medicine, the momentous importance of which was being more and more realized, and if he mistook not, the dental profession had reached that stage, and were concerning themselves in educating the public so as to prevent the evils which accrued from the neglect of sanitary laws. It was a subject of great national importance, and one which would secure for the dental profession a more wide-spread recognition than they had hitherto enjoyed from the public. He congratulated them on the great change that was to take place when they migrated to their new hospital, and he had pleasure in connecting with the toast the names of two gentlemen who had done them great service in the past, and who would not do them less service in the future; he begged to propose the prosperity of the National Dental Hospital, coupling with it the names of Mr. Roughton and Mr. Harry Rose.

Mr. ROUGHTON and Mr. ROSE responded.

Mr. J. SMITH TURNER gave the toast of the "Past and Present Students." He had in a manner been associated with the National Dental Hospital for many years; all dental institutions had had their ebbs and flows of fortune, and he did not think that the National Dental Hospital had been an exception. It might not be known that he was consulted, when it was at very low ebb, as to the propriety of closing its doors, and after discussing the question very anxiously he advised that they should not do so, and he thought that it would be admitted that his wisdom had at least for once been justified. He remembered many men who had been connected with the hospital at its inception, and he missed many, and one in particular, he referred to Mr. Felix Weiss; he had known Mr. Weiss for something like thirty years, ever since he took an interest in dental progress, dental education, and dental politics, and although he could not always agree with Mr. Weiss, yet he was a man with whom it was impossible to feel it disagreeable to disagree. He was a man thoroughly unselfish, with no axe to grind, no *arrière* *pensée*, nothing but the good of his profession in view; a man of many ideas, of great perseverance, and soundness of judgment. Mr. Smith Turner trusted that the digression would be excused for the sake of old friendship, but he felt that he could not speak without mentioning the name of Mr. Weiss. Referring to past and present students, he differed from those who believed in the sentiment "once students, always students." The past student was a very different animal from the present student; he might in the midst of his practice, his anxiety to make ends meet, his family cares, and his anxiety to please his patients, find time to think out some question that had bothered him, but that part of his studentship was more or less of a philosophical and morose character, and he was no longer a student in the sense that Mr. Smith Turner understood it. When he came to the present students he saw a body of young men who interested him entirely, they were ready to receive knowledge, to assimilate and utilize it; ready for anything, a game of football, a turn with the gloves, a joke or a laugh, but above all things he liked to see them ready for work, he liked to see a student coming into the lecture-room with a light footstep and a smiling face, a sign of good digestion, ready for a fresh lecture. The present student in this respect was very different from the past student. If the present student continued to approach his studies in the same earnest and genial way he would not have to make his steps less light, nor alter his countenance when he approached the entrance of the examination hall. He proposed the toast of the "Past and Present Students," coupled with the names of his friends, Mr. Morgan Hughes, and Mr. Cecil Bascombe.

Mr. MORGAN HUGHES, in responding, said that he believed that the past students had been hard-working, and when, as for many years, they had such a dean as their friend Mr. Gaddes, it would be agreed that it was their own fault if they did not look upon their lectures with unmixed pleasure. He regarded the meetings of the Students' Society as one of the most pleasant parts of the hospital work, and he looked upon that Society as a very good criterion of the *esprit de corps* which existed among them.

Mr. CECIL BASCOMBE also responded.

Mr. SPOKES proposed the "Visitors," and referred with enconium to the scientific work of Mr. Mummery.

Mr. HOWARD MUMMERY, in responding, said he might, as President of the Odontological Society, be allowed to thank them on its behalf; the connection between the Society and the hospitals had always been of the most amicable kind. As a Society they had been the tenants of one of the London dental hospitals, but being under notice to quit they were in danger of "summary eviction," not because they had not paid their rent, but because, like the National Dental Hospital, the London Dental Hospital felt the necessity of "pulling down their barns and building greater." With regard to the kind words that had fallen from Mr. Spokes, his work in dental histology he thought had been due to an inherent defect in his character; he was naturally obstinate, and had a tendency to scepticism which induced him to make researches on his own account. In conclusion, he wished success to the National Dental Hospital.

Mr. S. J. HUTCHINSON also responded in a felicitous speech.

Mr. G. CUNNINGHAM proposed the health of the Chairman.

The CHAIRMAN, in acknowledging the compliment, remarked that he had recently been reading the "Reminiscences of "A.K.H.B," in which was told the story of a divinity student in Glasgow who had to preach his trial sermon before the Synod. He took for his subject Jonah and the whale; everyone approved of the sermon except the Rev. Dr. Buchannan, who did not approve of it at all, "Because," he said, "While he has said a great deal about the sufferings of Jonah, he has told us nothing of the sufferings of the whale;" so he (the Chairman) thought when speakers were eloquent about their own sufferings, they too often forgot the greater sufferings of their listeners; bearing that in mind he would be brief. The story occurred to him of a lady who having had her photograph taken went to receive the proofs, whereupon she was dissatisfied, and asked the photographer if he did not think he could take a more pleasing likeness; the photographer replied, "No, madam, unless you can get another lady to sit." Unfortunately he had but little time at his disposal to be able to find them another Chairman, so that with all his imperfections he had come there as a specialist among specialists to do his best, and they had accepted his endeavours in the most kind and generous manner. He could not expect to preside again, but he did hope that he might have the pleasure of being present with them on some future occasion, and he could assure them that he felt thoroughly in accord with them.

The gathering then resolved itself into a smoking concert, and the remainder of the evening was very pleasantly spent.

The Dental Hospital of London.

The Annual Dinner of the Past and Present Students took place at the Café Royal on the 3rd inst., Sir Richard Quain presiding. There was a large gathering, and the company included Drs. Coupland, C. J. Hare, Hewitt, Harold ; Messrs. Bryant, Langton, Canton, Pickering Pick, Brownlie, Bowman Macleod, Bailey, Howse, Trimmer and Richard Vasey.

The loyal toasts having been duly honoured, the Chairman proposed the toast of the Past and Present Students. Representing the Medical Council as he did, he felt sure that he was fulfilling their wishes in presiding, for it was their desire to promote dentistry in every possible way. He might add that he himself had always felt a very deep interest in that branch of the profession—he should be sorry to think that dentistry was not a branch of the medical profession. He regarded the study of the teeth as second to none in interest, and he looked forward to the time when it would be considered as second to none amongst the specialized branches of surgery. It was quite true that in ancient times the practice of dentistry was confined to the ignorant mechanician ; to the manufacturer of substitutes for the teeth that were lost, and to some rude methods of stopping, yet much might be said of the past that would not be without interest ; but what, he asked, might not be said of the dentistry to-day ? which might be taken as a type of conservative surgery. Hunter, the pioneer in dental progress, was followed by Dr. Blake, who was perhaps not known amongst many present ; he was a graduate of Edinburgh, and practised in Dublin ; he criticised Hunter's works, and was perhaps more accurate. He again was followed by Fox, Salter, and others, all of them in connection with Guy's Hospital, in those days a great educating medium for dentists. When speaking of modern dentistry, he would remind them that it was developed by two classes of men, the scientific and the practical, amongst the former he would place Hunter, Blake, Fox, Bell, and Tomes, (who happily lived amongst them still) :

These gentlemen laid the foundation of scientific dentistry, that is to say, they studied the development and structure of the teeth. But he should fail to give credit to the scientific interest in the subject if he forgot that branch which afforded the means of tracing the history of extinct animals. Then they came to the practical department, and were reminded of the names of Cartwright, of whom a representative still exists, Bigg and Saunders, to whom they owed so much. Then there was Mr. Corbett of Dublin, and Dr. Smith of Edinburgh. This brought him down to the period when the Dental Hospital of London was founded. Amongst the leaders of to-day—worthy successors of the names he had mentioned—they had Mr. Charles Tomes, S. J. Hutchinson, Dr. Baker of Dublin, and he should not omit to mention Mr. Geo. Campion, Dean of Victoria Hospital, and Lecturer on Dental Surgery. Messrs. Newland Pedley and Maggs had established a great dental school at Guy's, and he would remind them that all the dental surgeons at the London Hospital had been pupils at that hospital. Coming to the immediate present, they had the name of Mr. Northcroft, who had obtained the Saunders Scholarship. He believed that there was a great future before them, and he hoped and trusted that the younger students would remember that, and that they would feel that they were members of an honourable profession, that they were members of the medical profession. He was sure that the Medical Council would do all that they could to promote their interest. He might remark that at the last meeting of the Council they had passed a resolution to prevent "covering," and they were not satisfied with merely sending a warning to certain suspected persons, but they were sending a warning to all dentists. One thing this letter would probably enable them to do, viz. :—deplete what he felt to be a horribly over-crowded Register. It was a remarkable fact that there was no definition in the Dentist's Act as to what dentistry really meant ; in the early days of the Register it meant pulling down several teeth, and at that time dentistry was rather destructive than conservative. He was one of those who had to administer the Act, but although he did not for a moment entertain any such notion of the true functions of dentistry, nevertheless in the absence of any definition he was unable to prevent such men coming upon the Register. Speaking to the students, he felt sure that if they would only be faithful to their profession, if they would remember the past, if they would be earnest, if they would value time and not waste it, he believed that their profession would be second to no other branch of medical science. He gave them the Past and Present Students coupled with the names of Mr. G. G. Campion and Mr. Northcroft.

Mr. G. G. Campion in responding said, that it was never an easy task for a past student to rise to return thanks for the toast, which was always on such occasions proposed by the President, but that evening the task was certainly harder than usual on account of the brilliant assembly, and on account also of the eminence of their Chairman, to whom they were so much indebted for being present. The Chairman had referred to the past, and also to the future, and had spoken of the interest which he, and other members of the medical profession, had taken in their welfare and their work. The dental profession would always remember with gratitude the interest which Sir Richard Quain and other members of his profession had taken in them. The Chairman had alluded to what had taken place at the session of the Medical Council so recently concluded, he meant the resolution passed on the subject of "covering," which was of so much importance to dentists. There was another point upon which action had been taken under the Chairman's distinguished predecessor, namely, the question of closing the Dental Register to all men who had not obtained the Dental Diploma. That also was a grievance, for it was not desirable that uneducated men should obtain entrance to the Register without qualification. These measures evinced the warm interest which the medical profession had shown in their welfare in the past, and which he was sure they would continue to show in the future.

Mr. Northcroft, on rising to respond for the Present Students, was very warmly applauded. He said he wished it was in his power to return thanks in as graceful terms as the toast had been proposed ; unfortunately he felt something like the ass who died of starvation between two panniers of hay, for although there was no doubt much to be said upon the subject, he was afraid he was not the man to say it. Present Students had one advantage, they had no past, they were living in the present and, fortunately could have no no regrets for what might have been. He should look with much pleasure on his association with the Dental Hospital of London, the friendships that one might form there were of lasting character, and of value that no man could overrate. They were under a staff whose brilliancy, and at the same time painstaking care, was well known. And they were also under the care of a Dean who was anxious for the well being of everyone, whose desire was that every man should do his best, and who was anxious to keep up the prestige of the Hospital. He trusted that they would all endeavour to follow in the steps of their predecessors, and always to the end of their lives be only too glad to be students.

Mr. Thos. Bryant said that he was entrusted with the toast of the Hospital and School, and it was with much pleasure that he proposed it, for he had watched its rise, progress, and development under the fostering care of many friends, and more particularly that of Sir Edwin Saunders, until at last they saw it as a full budding flower, of which they could say nothing but good. It was almost in his lifetime that dentistry had been brought from obscurity to an exalted position, and though it had of course been greatly aided by the medical profession, still very much had been done by themselves; they saw the necessity of higher education—in which they had been encouraged by the Corporation, which he now had the honour of representing—and so the standard of the examinations had been raised. Being now only a looker-on at examinations, he might say that it had been a great pleasure to him to see how steadily they had improved year by year, how the rejections had acted beneficially, for there was not a shadow of a doubt—to take the last examination in which he took part—that men were better prepared now than formerly. He was pleased to hear from his neighbour, Mr. Langton, that at the last examination three-fourths of the candidates passed, and passed exceedingly well. He might tell them in confidence that in the early days of examination he said to himself it was impossible to be an honest man, that is to say, that if he gave the marks as he ought he should have plucked every one of the candidates, or at least 70 per cent. Men came to the Examining Board who did not know the common bones of the arms, and still less knew the muscles which were excited in the extraction of a tooth. His friends told him that men now came up to the Dental Board well equipped, and the examiners might be perfectly honest. Referring to the future of dentistry, he said that the Corporation could do something, but they must do much for themselves, the progress in each department of medicine and surgery depended upon the acts of their individual members. In conclusion, he begged to propose the Hospital and School, coupled with the names of Dr. C. J. Hare and Mr. Morton Smale.

Dr. C. J. HARE responding for the Hospital, said that everyone in his turn, no doubt, felt a personal interest in dentistry, and as age advanced perhaps that interest became more keen and acute. As by the kindness of the Board of Management he had been asked to assume the responsible position of their Chairman, he had had some opportunities of seeing something of the inner mysteries of the Hospital, and the more he learnt of those mysteries the more he found that the object of the Hospital was to promote the welfare of the profession. It was difficult to say whether teachers or student were more indebted to a hospital, but no man could have a perfect medical education unless he had a thorough hospital education, and thorough clinical teaching was essential above all things. The work of that Hospital had been to his mind something prodigious, he believed no fewer than 54,000 cases had been dealt with during the past year; let them think of the amount of suffering on the one hand, and of comfort on the other that that involved. The work of a hospital depended upon its means, and it was now a most anxious question, with reference to the Dental Hospital of London, whether or not, as it now existed, it was fulfilling all the functions that a hospital should fulfil; whether every student had all the opportunities he ought to have for acquiring skill. It had been felt that the space had become insufficient for their needs, and it was an open secret that the Committee of Management was looking out for some way of increasing the size of the Hospital. He very much hoped that the site would not be removed, or at least that it would be an equally important and commanding site as the present one. He trusted that the means would be forthcoming so that every student would have that opportunity of perfecting himself, which he hoped was the wish of every student to do.

Mr. Morton Smale replying for the school, said that the development of scientific and conservative dentistry, which had been alluded to so ably by the President and by Mr. Bryant, had resulted he thought in popularizing the subject of dental surgery among both rich and poor, and this had caused their hospital to be over-crowded by patients. It was not possible to find room to treat them with that consideration and care which they (the Committee) desired. When he stated that the number of patients had increased by 3,000 this year, they would understand how impossible it was that the present accommodation could adequately provide for the teeth of the future. So much about the hospital; but there was another side to this question, and that was the school. Now the school was also crowded, and increased space was very much desired, in order that they might make their school more fitted for the modern practice of dental surgery, and this was all the more necessary, as so very large a number of men were coming into the profession. When he mentioned that in 1885, the number of men entering the dental hospitals was eighty-seven, and in 1891 (six years later), the entry had increased to 176, that is to say just more than double, they would see that it was quite impossible that the school that had provided for the teaching of eighty-seven could also teach 176. He was prepared to prophesy that the sons of gentlemen would be sent into the dental profession in larger numbers than in the past, and that in five years more the number of students would be again double what they were at the present time. The accommodation was therefore perfectly inadequate, and it was their duty to prepare themselves for the future. It was desired to build a new hospital, and a new school, on a new site ; and he should like to say that this was not his opinion only, but also the opinion of the whole staff of the hospital. He was quite sure that it was also the opinion of all the students of the hospital, and if the parents and guardians visited the hospital it would be their opinion also. Well now, the new site and new hospital would probably cost about £40,000 ; he thought that the Committee of Management were quite right in hesitating, and hesitating considerably, before they took the plunge. The opponents of the scheme said that "their frontage was so grand ;" so it was, but he did not care so much for frontage, what he desired was depth. In his opinion it would be desirable if possible to keep on the present hospital while building the new one, so that their work might not be interrupted. For his own part, he should have no hesitation in approaching the public for the £40,000 ; the public had never helped the hospital to the extent it deserved. He thought the matter should be placed before the public in such a way that they would realise its importance, and provide the money they required. He should like to say that the staff to which he had referred, to show how earnest they were, had already promised £3,000. Considering the amount of benefit that the rich receive from the school he did not see why they should not provide the money that was wanted. £40,000 was a small sum if only all who benefited through the existence of the hospital would help. Forty donations of £1,000, eighty donations of £500, or 160 donations of £250 was all that was required. He was willing, and he was sure there were other gentlemen in the room also willing, to be amongst the 160. When he looked around him and saw so many members of the profession who had received their education at that hospital, and by it had been put in the way of making a considerable income, he felt sure that they would each be ready to put their hands in their pockets to assist their Alma Mater.

The toast of the Visitors was proposed by Mr. H. Baldwin, and responded to by Mr. Pickering Pick.

Mr. J. SMITH-TURNER gave the health of the Chairman, who in briefly acknowledging the compliment expressed the great pleasure it had given him to preside.

It is only necessary to say that the musical arrangements were under the direction of Mr. E. Lloyd Williams, in order that it may be understood that the remainder of the evening was ver pleasantly spent.

Charing Cross Hospital Medical School.

THE Scholarship of 60 guineas, open to students of the Universities of Oxford and Cambridge, has been awarded to Mr. Walter S. Sheppard, of Christ's College, Cambridge.

The Entrance Scholarship of 120 guineas has been awarded to Mr. Sidney Herbert Berry, and that of 60 guineas to Mr. Alfred Burn.

Royal College of Surgeons in Ireland.

DENTAL EXAMINATION.

The following gentlemen having passed the necessary examination, have been admitted Licentiates in Dental Surgery of the College :—Mr. Ernest Catt, Scarborough, and Mr. Louis Benjamin Eskele, Bath.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

To the Editor of the "DENTAL RECORD."

PRIMARY DENTITION IN ITS RELATION TO RICKETS.

DEAR SIR,—I feel sure that all who have devoted study to the above subject will have read with interest the carefully compiled paper by Dr. G. Carpenter and Mr. Denison Pedley, which appeared in your last issue, and as their results will upset all previous records, it occurred to me that I might again refer to mine, in the hope that others may follow, as it is of great importance that this comparatively simple subject should appear correctly in our text books.

In 1887 I published in the *Guy's Hospital Gazette* some remarks upon rickets in relation to teeth, which since that time have not been modified. During the time that I was in the out-patient department at Guy's Hospital, under Mr. Charters Symonds, he was the first to point out to me the condition of the temporary teeth in rickety subjects. I then devoted considerable time to examining numerous little patients suffering from well-marked rickets, and I found in the majority of such cases that the teeth were a soft type, often decayed; again, I frequently found the teeth loose and some had dropped out. It would not be reasonable to put all, if any, of the above down to syphilis, when one could find no traces of the disease. Rickets being a disease due to malnutrition (lack of inorganic salts, etc.), it would seem unnatural if the teeth should not suffer the same as the bone. Again I have found that in syphilitic teeth (although they are pitted and unsightly and decay early, owing to the irregular manner in which they are formed, with often deep pits and fissures), are as dense and contain as much inorganic matter as is normal, which certainly is not the case with rickety teeth. One must take exception to passages in the final part of their paper: "That the association of rickets with carious teeth as between cause and effect is merely an assumption," and "What is wanted is more extended and definite observations on this interesting point, and not statements which go the round of the various medical books in somewhat different dress, quite unchallenged, and accepted as truisms," are to say the least very bold; and I should hope that great investigators in medical science will take exception to such remarks.

Believe me, yours faithfully,

JAMES F. RYMER.

Selections.

ANTI-CONSERVATIVE TREATMENT OF EXPOSED DENTAL PULP.

By CHARLES HARKER, D.D.S.

THE title of my paper makes clear the fact that, with me, the method of treating exposed pulps is the radical one. To this method I was driven by my almost universal failure in pulp-capping and palliative treatment previous to the last five years.

During this period I have devitalized more than ninety-five per cent. of all exposures presenting in practice, with no per cent., so far as I know, of failures to record.

If, therefore, I have been successful in any department of practice, it is with these most difficult and perplexing cases; and if I can convey intelligently this anti-conservative method to one young operator, sparing him and his patients my early failures, I shall feel more han repaid for my endeavours.

I say most difficult and perplexing, although, if we read over the articles on conservative treatment which have appeared in dental journals during the last decade, we might conclude that the dental pulp is the most manageable and accommodating of vital tissues.

I am well aware that I shall be arraigned by the able conservative advocates present, for my so-called wholesale destruction of vital organs ; but, be this as it may, I must state my convictions, based as they are upon my own experience.

When I state that I devitalize ninety-five per cent. of all exposed pulps, with no per cent. of failures, I do not wish to be understood as claiming immunity from trouble subsequent to devitalization, extirpation and root-filling. Teeth having abnormally-formed or compressed roots, constrictions, nodules of dentine in canals, pulp-stones, etc., present difficulties not insurmountable, but requiring skill and patience for their successful treatment.

In my practice, in less than one per cent. of the teeth operated upon, has irritation occurred of a nature serious enough to require removal of the permanent filling ; and in these exceptional cases subsequent treatment has resulted in restoration to comfort and usefulness. In no one do I recollect an abscess having formed subsequent to root filling, followed by extirpation of the pulp.

On the other hand, my experience in capping the fully-exposed pulp, due to extensive caries, has been almost always followed by pain to the patient and trouble to myself or my neighbour-dentist, with disaster to the tooth within two years unless the pulp was promptly devitalized, removed, and the root-canal properly filled. I say disaster to the tooth, because when the tooth is left to absorb the putrescent products of a decomposed pulp, the tissue itself suffers irreparable injury, not only in appearance but structurally as well. The dental tubuli having become saturated with the gaseous and sanious products of decomposition, the basal structure altered, the enamel discoloured, checked, and brittle, a tooth is presented unwholesome to its surroundings and infinitely inferior in strength and comeliness to the one where the exposed pulp has been extirpated at sight or devitalized by the usual process, extracted, and the subsequent operations of root and crown-filling completed properly and at the right time. The strength, colour, or structure of the tooth is but slightly altered.

I have two teeth in my own mouth the pulps of which were devitalized, the roots filled with creosoted cotton, the crowns with amalgam, about twenty-two years ago, by my preceptor, Dr. Brown. After the lapse of twelve years the fillings were removed and the cavities refilled ; until this time I did not know the pulps had been devitalized, and, with the exception of a little peridental irritation of one at the time, due to the unnecessary removal of root-filling to substitute a solid one at the apex (in most cases a bad practice), the teeth and surroundings have been perfectly healthful and useful. They appear to be good for at least a score more years of active service.

I could give instances of teeth having been treated likewise, in which more than forty years of uninterrupted health and usefulness have been enjoyed.

Notwithstanding cases similar to these frequently come under our observation, I do not claim that pulps should never be capped. In traumatic cases, where the excavator has accidentally punctured the peridental membrane, or where fracture has occurred, slightly exposing the pulp, capping should be practised ; especially as cases of this nature are usually the most favourable.

No one, I think, is more careful than the speaker about lining deep cavities in teeth whose pulps are not exposed. Magitot, in his treatise on dental caries, not only tells us, but clearly demonstrates by beautifully executed cuts, the pulp complications where no exposure, or even near approach to it, exists.

Capping with oxyphosphate or oxychloride, to which is added about one part of carbolated vaseline to ten parts of the oxide, I believe conduces very materially to conservation of the pulp's vitality ; and yet, more or less frequently, we all have pulps die when capped under these most favourable circumstances.

Whether the loss of vitality is to be attributed to the continued irritation due to previous caries, the impingement of secondary dentine, thermal changes, the taking of cold, or what not, the result is the same ; proving that, instead of being easily manageable, a tooth-pulp is so treacherous that we can never predict with certainty the results of capping.

This operation is based upon a most beautiful theory : there are many beautiful theories that do not work well in practice. I have always been in the habit (it may be a bad one) of uncapping all capped pulps coming from the hands of other dentists ; that is, when refilling has become necessary, or disease is apparent. In this way I gain certain knowledge of the conditions present at the time of my operation—knowledge which, it seems to me, can be gained in no other way. In almost every case in which the tooth has remained comfortable I find no real exposure exists nor ever did exist.

A small per cent. of these, however, have quietly succumbed, especially those in which the regular oxyphosphate mixture has been used. Cases in which real exposure existed at the time of capping I have usually, although not always, found dead. When alive they appear, as they did before the capping, more or less diseased, but apparently resisting progressive diseased action while the vital forces are strong in the individual, but ready, whenever systemic changes occur reducing vital force, to develop a local inflammatory condition, resulting in death.

I am aware those who advocate conservative treatment claim, by properly directed antiphlogistic measures, to be able to allay all irritability; but to my mind the treatment of an inflamed tooth-pulp by leeching, cold application, purges, &c., while the irritant (the plug) remains *in situ*, is too absurd to need comment.

I have yet to find the first instance of a previously exposed pulp due to caries having itself after capping wrought out physiologically the theory which the capping process promises, or rather, I should say, the result which the conservative advocate promises for the theory. That this physiological deposit ever takes place after caries has caused a rupture of the pulp membrane, is still a question. No one, I think, would assert that the pulp ever does return to a perfectly healthful normal condition. That it may do so after exposure due to traumatic cause, is more reasonable to suppose.

In my experience, the membrane when ruptured by caries does not heal at all; when uncapped, it always presents a raw surface. I have, however, in a number of instances accidently punctured the pulp in excavating, and, having capped and filled with cement, after the lapse of one year or more, upon uncapping I have found no exposure existed, calcified matter having formed under my cap. Underneath the calcified deposit I have no doubt cicatricial tissue had formed.

In the case of a girl, ten years of age, who had, by a fall, broken off the mesial corner of a superior central incisor, exposing pulp, so as to bleed slightly, I at once capped and built out to the original contour with gold. Five years afterwards, while playing at school, she again fell, breaking away the entire filling. Upon removing the cap, I found this pulp beautifully protected by a secondary deposit of well-formed tooth-bone.

This case, though interesting to study, does not come under conservative treatment in the usual acceptation of the term. I merely cite it to show the distinction, and also to show that we must have the ruptured membrane re-formed before we can have its function. Experience proves that after rupture by caries it does not re-form ; it cannot, therefore, produce the secondary deposit claimed by the conservative advocate.

Since this paper has been in the course of preparation, one of these patients has visited my office, in whose lower jaw I found six dead teeth, which had been well and scientifically capped by an eminent Philadelphia dentist. Another had been treated in whose mouth I found three suppurating abscesses, with another tooth in the incipient stage, the results of well-capped pulps. I might enumerate cases which are striking illustrations of disaster resulting from unwise but well-meaning endeavours at pulp-conservation on the part of otherwise successful practitioners.

I do not believe with some that the whole office of a tooth-pulp has been performed when it has finished the construction of the tooth in which it is located ; on the contrary, I hold that its function never ceases while it is in comparative health. It continues to nourish the dentine, and under some circumstances to elaborate secondary dentine, notably when the pulp is being encroached upon, owing to mechanical or chemico-mechanical abrasion, and when caries is threatening exposure. I do not, therefore, wish, nor would I dare to claim, that a dead tooth is as good as a live one, other things being equal. I believe I practise conservative treatment of teeth by non-conservative treatment of the diseased pulp.

Is this not good surgery ? In the practice of general surgery, does the surgeon hesitate to destroy the diseased part of an organ, if thereby the function of the whole may be preserved ? Should we, then, as special surgeons, hesitate, especially as we, unlike them, are able to substitute artificially the lost part so perfectly that our patient feels, sees or knows no loss ?

The operations involved in dealing with exposed pulps, whether by extirpation or capping, call for skill and nicety ; careless or indifferent operations will fail in the former sometimes, in the latter always.

Indeed, upon the exercise of judgment and skill in this department depends very largely the number of our patients ; it is vital to our success. How, then, shall we treat them ? Two methods are open,—palliative and radical. Upon the former I have dwelt sufficiently long; the latter I will now endeavour briefly to describe as I practise it. There may be nothing new or superior in it, but when thoroughly performed it is successful.

The teeth do not to any extent check, chip, break, discolour, or give other annoyance to patient or dentist. The models which I will pass may assist me in showing the partial and completed operations.

The plug is removed, or, if a fresh exposure, place over the exposed portion of the pulp pure carbolic acid for about two minutes, then, covering with sandarac and cotton, dismiss until the next day; at which sitting the previous medicament is removed, and the arsenious acid applied directly to the exposure, sealing again with sandarac and cotton.

I request the patient to call on the fourth day, when the arsenic is removed, the pulp entirely uncovered, and a portion excised, bleeding it freely to prevent pinking of tooth during the waiting time, about three weeks, while nature is deciding how much of the pulp she will give up. I then place in the pulp-chamber a piece of dry absorbent cotton, carrying as much as it will of iodoform powder, the piece of cotton being large enough to fill the pulp-chamber.

The cavity is then filled with a temporary gutta-percha stopping until the final operation, when I place dam upon the tooth, and extract pulp from root or roots. With No. 7 or 8 uncut Swiss broach having a perfect taper point I work a mixture of campho-phenique, iodoform, and zinc oxide to apex, following with a tiny fibre of cotton, carried as nearly to the point as the previous mixture will allow without painful pressure.

This procedure ensures carrying a bland sterilizing apical stopping entirely to the so-called "apical space,"—that is to the border-line separating devitalized dentine from living cementum and its investing membrane.

Removing with a broach the fibre of cotton, and drying the canal as thoroughly as possible, the remainder of the canal, when of normal calibre and formation, is filled with a gutta-percha cone made to fit the canal, the point of the cone having been moistened with chloroform previous to introduction.

The apical portion in two-rooted bicuspids, compressed anterior root of lower molars, and other tortuous or constricted canals, may, by using No. 7 slender Swiss broaches, usually be well filled, either with the antiseptic material I have indicated or with chloro-gutta-percha.

Except for the removal of adherent and other calcific deposits, I never ream canals more than may be done with ordinary bud-shaped excavating burrs ; canals which may not be reamed without great danger of going through the side of the root or breaking off the reamer, may be well filled without reaming. Nicely tempered slender broaches adapt themselves without danger of breaking ; reamers do not.

There is a field for the exercise of judgment in removing or overcoming the occasional difficulties of the apical territory, which perhaps no written description would cover, but which the cultivated judgment and touch, together with delicately formed and properly tempered instruments, will enable us to surmount with comparative ease.

Some of these exceptional conditions woutd have caused trouble, and ultimately death, had the pulp been capped and the capping operation itself been successful.

I do not remember ever having heard mentioned the method of approach which I use in dental exposures of lower molars, and would call attention to it, knowing from practical experience that by cutting away the posterior buccal corner as far as the buccal seam, instead of the usual drilling of a hole through the buccal wall, our light, line of vision, directness of approach, and movements of instruments are less obstructed.

I think you will also agree with me that, in addition to facilitating the whole operation, a tooth thus prepared is stronger than when filled in the usual way.

Let me say that if the arsenic has been well triturated, the proper dose used, the nerve well exposed before applying, the sandarac bottle warmed before using, and no pressure made upon the pulp in sealing up, there will very rarely be any pain from the application, and no danger from the effect of arsenic upon external peridental membrane, either about the apex or gingival margin.

In case the effect has not reached through the whole extent of the pulp, I remove the portion devitalized, re-apply a minute quantity of paste—one part arsenious acid to ten parts iodoform, moistened with campho-phenique—or anæsthetize locally with cocaine, and remove.

I much prefer removing the entire pulp to the apical constriction, but, if unable to do so, no harm will come from leaving in the canal the slender apical fifth of pulp whether dead or alive, provided the antiseptic filling I have recommended be well picked into it; if not dead, it will die, and make a fairly good apical filling. When trouble follows devitalization, it is from one of two causes—either peridental irritation arising from an overdose of arsenic, or ultimate disintegration and evolution into septic gases of unsterilized, shred-like portions of the pulp remaining in the inaccessible portions of tortuous or constricted root-canals. In my experience the former difficulty rarely occurs, and always subsides in a few days without treatment. I have already referred to the infrequency of the latter; when it does occur it is of more serious nature, but its consideration would take us into the treatment of incipient abscess, a discussion beyond the legitimate compass of my paper.—*International Dental Journal.*

OBITUARY NOTICE.

MR. HENRY MOON.

We much regret to record the death of Mr. Henry Moon, Surgeon-Dentist, for many years a member of the Staff of Guy's Hospital. He was the son of Mr. William Moon, who was in practice at Tottenham. Always delicate, he chose dentistry as a calling suitable to his condition. He qualified for the medical profession, entering at Guy's. After passing his examinations, he studied at the Dental Hospital, where he secured several prizes. He was Vice-President of the Odontological Society; Examiner in Dental Surgery at Royal College of Surgeons; and on the retirement of Mr. Salter, was appointed Dental Surgeon and Lecturer on Dental Surgery at Guy's Hospital. Then he became Dental Surgeon to the Dental Hospital, London. He was the author of the article on Dental Surgery in 'Bryant's Surgery'; also papers in Guy's Hospital Reports, and Odontological Society's Transactions, and the Journal of the British Dental Association. His health failed him about four years ago. He went to his brother in New Zealand, where his condition improved, and he was able to assist a friend out there in practice. About a year ago he returned to England, intending to go back in a year, but his health again failed him, and he died on November 14th, 1892.

GOSSIP.

A correspondent favours us with notes of the following case:—"In November, 1891, I was called in to see Mrs. ——, who was wearing a plate dependent on a second molar on each side, and a right central; the plate had been worn on and off with more or less pain and discomfort for nearly twelve months. On examining the mouth I found a shiny small lump in palate behind where the left lateral had been. The patient being under medical treatment and having been told, as *she* said, there was a cancerous tendency in her, I did not like to interfere much, so advised her to leave off wearing the plate entirely, and prescribed a borax, &c., lotion. In a few days the swelling went down very much and the mouth was much more comfortable, though shooting pains were said to sometimes run up from the floor of the nose towards the top of it. Shortly after the left molar snapped off, and the lady being very anxious to have some teeth to wear, I removed the right central and the right molar under gas, and when the gums healed (in a few days) made her a vulcanite case (the original was gold), cutting out a piece in the palate to prevent any pressure, which answered its purpose very well for a couple of months or so, when the patient was ill for a month or more. On resuming the case it would not go up to place, why, I could not understand, as it in no way impinged on the lump in the palate, but I noticed on examining the swelling that it had slightly increased again, and there was a small spicule of bone or root, just showing in it; on probing, it was found to be loose. Another dose of gas was given and the spicule removed with the elevator, but on further probing more dead bone could be felt, which was quite firm, and the elevator could be plainly felt to pass in under a shelving plate of bone for some distance backward. In a few days the incision made to remove the loose piece had retracted, and freely exposed the cause of trouble. Strange to say, there is very little angry irritation about the part, a few granulations at the back looking unhealthy, but not the surrounding tissue. I have since made the upper case on the same plan, but how long it will answer I cannot say, as the arch of the palate seems filling slowly. The only cause I can assign is that given by the patient herself. On first having a plate made about eighteen months before I saw her, she had some of her own teeth excised without previous cutting into; one gave great pain in the process, as she describes, the forceps having seemed to slip up into the palate, putting her finger where the right lateral stood. This plate not proving a success the excised roots were extracted and another plate made, which she was wearing when I saw her first. My opinion is that the line of force used in cutting off the lateral must have split the root and travelled backward and cracked the palatal portion of the superior maxillary bone, the latter operation of extracting probably displacing the edges of the parts. It is, of course, conjectural, but greatly strengthens me in my dislike to the excising forceps, which I think ought to be relegated to limbo along with the key."

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